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APRIL-JUNE 1973

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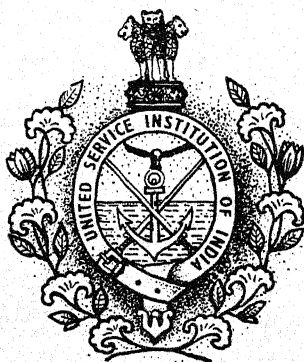
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NOTE

The views expressed in this Journal are in no sense official and the opinions of contributors in their published articles are not necessarily those of the Council of the Institution.

UNITED SERVICE INSTITUTION OF INDIA

GOLD MEDAL PRIZE ESSAY COMPETITIONS 1973

(A) FOR ALL OFFICERS IRRESPECTIVE OF RANK

SUBJECT

The Indian Armed Forces have been geared primarily to meet a threat from across our land frontiers. The establishment of naval bases in the Indian Ocean by the great powers as also the military rise/potential of the countries in or in the vicinity of the Indian Ocean create a situation of significance to our national security.

What strategy should India adopt in relation to the Indian Ocean?

(B) FOR CAPTAINS AND MAJORS WITH NOT MORE THAN 10 YEARS SERVICE AND THEIR EQUIVALENTS IN NAVY AND AIR FORCE

The necessity of keeping our Armed Forces young, so as to maintain a high state of physical efficiency, is causing personal problems of increasing magnitude. Careers are short and absorption in civil life difficult in middle age.

Is there any way out of this dilemma? Discuss the possible ameliorative measures.

RULES

1. Competition (A) is open to all Commissioned Officers of the Armed Forces of India, the United Kingdom and other Commonwealth countries, officers of the Territorial Army and the Senior Division of National Cadet Corps and Gazetted Officers of the Civil Administration in India.

2. Competition (B) is restricted to Captains and Majors with not more than 10 years' service and the officers of equivalent rank in Navy and Air Force.

3. Essays may vary in length between 4,000 and 8,000 words. Should any authority be quoted in essay, the title of the works referred to should be given.

4. Essays should be typed on one side of the paper (double spacing) and submitted in triplicate.

5. Entries will be strictly anonymous. Each essay must have a motto at top instead of the author's name and must be accompanied by a sealed envelope with the motto outside and with the name and address of the competitor inside. These envelopes will be opened by the Chairman of the Executive Committee at the Council meeting, after the judges have given their decision.

6. The judges will have two criteria in mind:—

- (a) The extent to which the contribution throws fresh light on the subject; and
- (b) Whether in whole or in large part it is in a form suitable for publication.

7. Essays will be submitted for adjudication to three judges chosen by the Council. The judges may recommend the Gold Medal to the winner and/or a cash prize, as well as a cash prize to the runner-up (subject to the sanctioned limit of Rs 700/- in all, for prizes). The decision of the three judges will be submitted to the Council, who will decide whether the Gold Medal is to be awarded and whether the essay is to be published. The names of the successful candidates will be published in Apr.-Jun. 74 issue of the Journal.

8. The Institution reserves the right not to make an award if none of the essays submitted reaches standard which the judges consider adequate.

9. All essays submitted are to become the property of the United Service Institution of India absolutely, and authors will not be at liberty to make any use whatsoever of their essays without the sanction of the Council.

10. All essays should be sent to the Secretary, United Service Institution of India, 'Kashmir House', King George's Avenue, New Delhi-110011 to be received not later than 31st December, 1973. The envelope should be marked as follows:

- (a) Open to all "ESSAY COMPETITION (A)"
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INDIA-PAKISTAN AND THE AMERICAN ATTITUDE

M.S. DAHIYA*

SOME months ago President Nixon asked Mr. Moynihan : "Will you accept the ambassadorship to the biggest democracy of the World?" Mr. Moynihan happily agreed. This shows that India's democratic values have special importance in the American mind. As a whole, notwithstanding the differences between the two countries over some matters, the United States' contribution to the development of India and her sympathetic attitude towards the Indian national movement cannot be ignored¹. On the other hand, when in the early '50s a visiting American Senator was asked by a Pakistani in Karachi what Americans thought of Pakistan, he said, "My dear boy, they have not even heard of it."² There is, however, no doubt that America is to a large extent responsible for building up Pakistan both economically and militarily. The 'USA's main aim was to contain the spread of Communism in the newly independent countries of Asia. To this end, she thought it best to conclude military agreements with Pakistan, which has a strategic location in the sub-continent. America's attitude towards India and Pakistan should be studied against this background.

After the partition of India in 1947, in sharp contrast to the Russian attitude³, America was interested in maintaining good relations with India, in preference to Pakistan, but Nehru's attachment to the policy of non-alignment was, according to American policy-makers, a hurdle in the way of

* The author is Lecturer in Political Science, Hastinapur College, University of Delhi.

1. President Roosevelt took keen interest in getting self-government for the Indians. When there was a deadlock between India and Britain, he sided with India. Even his war-time envoy strongly advised him to take a firm line against Britain and intervene to secure India's independence. See for details, Harnam Singh, *The Indian National Movement and American Opinion* (Delhi, 1962), pp. 371-3
2. R.S. Gupta, "A Study of Indo-U.S. Relations", *Foreign Affairs Reports* vol. 23, no. 5, June 1969, p. 52.
3. The Soviet Union considered both India and Pakistan as the colonies of Great Britain, and adopted a wavering attitude towards the Indian sub-continent. See for a detailed study M.S. Dahiya, "Soviet-Pakistani Relations since 1950", *U.S.I. Journal*, October-December 1972, p. 333.

such developments⁴. In view of this, America began to woo Pakistan. As the Pakistani leaders were interested in cementing their relations with Washington in preference to the Soviet Union,⁵ Prime Minister Liaquat Ali Khan cancelled his projected visit to Moscow in 1949 and went to Washington on the invitation of President Truman in 1950⁶. As the main aim of Pakistan was to secure America's clear-cut support on the Kashmir issue, and as the American Ambassador in Pakistan had assured the Pakistani leaders Washington's vigorous support on this question "in exchange for participation" in the Korean war, it was natural on the part of Karachi to make friendly gestures.⁷ Quoting from *Avanti*, a newspaper of Rome, *Pravda* said that the State Department had informed Pakistan that "the U.S.A. is ready to offer great economic assistance" to Karachi, "if the Government is altered to make it more amenable to collaboration" with Washington. Under these circumstances, America "is even ready to promise the Karachi Government "her" active support on the Kashmir question."⁸

MILITARY PACTS

So far as India was concerned, in spite of her support to the U.N. resolution on Korea, she almost adopted a neutral attitude and criticized bombing attacks.⁹ Moreover, in contrast to Pakistan, India strongly criticised the San Francisco Treaty between the United States and Japan. But the American Government continued to pursue New Delhi to join the

4. The Indian attitude made some "circles of the Truman Administration wonder how a containment policy could be applied" to Asia if this "greatest Asian democracy" was not inclined to join the so-called "free world's defence system". George J. Lerski, "The Pakistan-American Alliance: A Revaluation of the Past Decade", *Asian Survey*, vol. 8, no. 5, May 1968, p. 402.
5. According to a Pakistani Group Study: "Pakistan had noticed the subservience which was forced upon the allies of the Soviet Union and, as we have seen, independence had been won after too profound a struggle for its loss to be risked. Furthermore, there was the question whether Russia could supply the aid, both material and technical which Pakistan so urgently required. For these reasons, an alliance between the two countries was, *ale initio*, impossible". "The Fundamentals of Pakistan's Foreign Policy", *Pakistan Horizon*, vol. IX, No. 1 March 1956, p. 46.
6. On his way back to Karachi from Washington, Liaquat Ali Khan declared that Pakistan would give every assistance "within its means", in support of Washington's "aggression in Korea". "Liaquat Ali Khan Shows Servile Zeal", *New Times*, No. 28, July 12, 1950, p. 19.
7. "Americans Incite Conflict Between India and Pakistan", *Current Digest of Soviet Press* (Hereinafter referred to as C.D.S.P.), vol. 2, No. 32, September 1950, p. 28.
8. *Ibid*, vol. IX, No. 25, August 2, 1952, pp. 10-11 (From *Pravda*, June 19, 1952, p. 3).
9. Prime Minister Nehru said: "there is no doubt that severe bombing attacks are taking place in North Korea. India is opposed to such bombing attacks, in the first place because innocent civilians are killed without reason and in the second place, this may create fresh problems and difficulties", C.D.S.P., vol. 2, No. 35 September 1950, p. 18. (From *Pravda*, August 28, 1950, p. 3).

free world solidarity to prevent the expansion of communism in Asia. When America did not find it possible, she invited Mr. Mohammed Ali, Prime Minister of Pakistan, to enter into military agreements in May 1954. This step of the United States was met with resentment in New Delhi and led to a sharp criticism of the American policy in the sub-continent.¹⁰ On the other hand, when the Soviet Union started the supply of military hardware to Pakistan in July 1968, the Government of India did not appear to criticize her so strongly. The Prime Minister, Mrs. Indira Gandhi, closed the chapter, terming it as "fraught with danger".

To pacify the Indian reactions, the then President of the United States, Mr. Eisenhower, wrote to the Indian Prime Minister that Pakistan would not be allowed to use the American armoury against India. But the public, press and leadership continued their attacks on the American policy, and refused to permit U.S. planes to fly over India en route to Indo-China.¹¹ This annoyed the United States to a large extent. The injury was deepened when in June 1954, the Chinese Prime Minister, Mr. Chou En-Lai, was accorded a red carpet reception in New Delhi. The United States took this to mean that India was in favour of a stronger orientation towards Peking.

The Soviet Union meanwhile invited Mr. Nehru to visit Moscow in the beginning of 1955. He was received with enthusiasm and the way was clear for a return visit of the Soviet leaders to India in December 1955. Since Pakistan had joined the military alliances sponsored by the United States, and since America had irritated New Delhi, the Soviet leaders, during their visit to India, supported the Indian stand on Kashmir and Goa. The American Secretary of State, John Foster Dulles, sharply reacting to the statements of the Soviet leaders and meeting De Cuhna, the Foreign Minister of Portugal, in a bid to protect the NATO alliance of which Portugal was a member, firmly asserted that "Goa, Daman and Diu are Portuguese provinces". This infuriated public sentiment in New Delhi and brought on Dulles' head a storm of protest and denunciation. It was referred to in some Asian circles as "one of the greatest diplomatic blunders in modern history."¹²

10. The Treasury and Opposition benches in the Indian Parliament criticised this move. Mr. Nehru said that "I have felt strongly that this step is a wrong step and a step which adds to the tensions and fears of the world. It adds to the feeling of insecurity in Asia. It is, therefore, a wrong step from the point of view of peace and removal of tensions. *"India's Foreign Policy, Selected Speeches of Jawahar Lal Nehru, September 1946—April 1961* (The Publications Division, Min. of Information and Broadcasting, Government of India), 1961, p. 471.
11. R.S. Gupta, No. 2, p. 44.
12. *Ibid*, p. 45.

The Russian influence began to increase in New Delhi, which was an appalling thing for the United States. As from the very beginning America was interested in preventing the expansion of communism in Asia, the necessity of improving relations with India was again felt in Washington. To achieve this, some friendly gestures were essential. Therefore, in August 1956, the United States entered into an agreement for the supply of wheat, rice, cotton, etc. Under this agreement a credit of \$350 million was given. But Russia's intervention in Hungary in the fall of 1956 and India's reluctance to condemn the Soviet Union. (The major objection here was the analogy that could be drawn with the Kashmir issue.¹³) created a suspicion in the American mind, because Nehru had condemned the British-French aggression in Egypt. But in view of her calculated move to improve relations with New Delhi, the United States soft-pedalled the incident. Moreover, in December 1956, Mr. Nehru visited the United States and repaired the damage done to the growing relations between the two. It may be said to be the real beginning of normal relations between New Delhi and Washington. M.S. Venkataramani, an Indian scholar, noted with satisfaction that

There has been a growing understanding and appreciation on the part of influential decision-makers in the United States of India's basic approach in foreign policy as well as her ambitious plans for economic development. Criticisms concerning India's so-called 'neutralism' and Mr. Nehru's alleged partiality to 'international communism' have tapered off noticeably in Congressional debates and even newspapers not generally noted for their friendliness to this country. It is conceded that the system of military alliances in Asia, which India had opposed consistently, had produced unsatisfactory and, in some respects, even adverse results. The wisdom of the decision to provide military assistance to Pakistan without due regard having been paid to its implications in terms of regional stability is being widely questioned.¹⁴

When in 1958, India was in great financial difficulties, the United States gave \$1000 million aid to India for accomplishment of her Second Five-Year Plan.¹⁵ As China was striding towards a higher goal in the economic

13. Broadkin, "United States Aid to India and Pakistan", *International Affairs*, vol. 43, No. 4, October 1967, p. 669.

14. M.S. Venkataramani, "The U.S. Senate Committee on Foreign Relations and India", *India Quarterly*, vol. XVI, No. 1, January-March 1960, p. 51.

15. Zubeida Hasan, "Western Arms Aid to India", *Pakistan Horizon*, vol. XVI Fourth Quarter, 1963, p. 333.

field, it was natural on the part of Washington to support India. In 1958, before the Foreign Relations Committee, Secretary of State, John Foster Dulles, told that it would be a calamity for the United States if India should go Communist :

There is not any nation in Asia which would not be deeply concerned if Communism were to take over India. It would be a blow to freedom in that part of the world comparable to the blow which occurred when the Communists took over the mainland of China... India has a culture, an influence, a prestige in the area which, if it were an asset in the hands of Communism, would greatly endanger all the rest of the free countries of Asia.¹⁶

EISENHOWER'S PLEDGE

The course of events in Asia continued to take new shape when the border conflict between India and China began to warm up in 1959. By this time both Peking and New Delhi started to look towards each other with jaundiced eyes. The rift between the two was widened in April 1959 by the Tibetan revolt, which was suppressed by the Communists. The rift got new impetus when Dalai Lama entered India and was given asylum. Since the policy of Washington had been to boost New Delhi in its rivalry with Peking, it made full use of this opportunity to pursue India to join the Free World Circle. The drive for improving relations climaxed in December 1959 when President Eisenhower visited India and assured America's assistance in every field. Moreover, the President seemed to have been influenced by the democratic institutions of India. He is said to have remarked :

Between the first largest democracy, India and the second largest, America, lie 10,000 miles of land and ocean. But in our fundamental ideas and convictions about democracy we are close neighbours. We ought to be closer.¹⁷

The year 1960 marked a turning point in the relations between India and the United States. An old friend of India, the Democratic Senator J.F. Kennedy, won the Presidential election in the United States. In the

16. U.S. Senate, 85 Cong, 2 sess, Committee on Foreign Relations, Hearings, Mutual Security Act of 1958 (Washington : Government Printing Office, 1958), p. 173, cited in M.S. Venkatramani, No. 11, p. 53.

17. Foreign Policy of India, Text of Documents (1947-64), Lok Sabha Secretariat, 1966, p. 475.

very beginning a significant gesture to India by the Kennedy Administration was the appointment of Professor J.K. Galbraith, a friend of India, as U.S. Ambassador to new Delhi. His successor, Mr. Chester Bowles, too was known as an old "India hand" and "a champion of India's cause in his country." Even before assuming the American Presidency, Kennedy is said to have gone on record to urge the United States to give unqualified support to India.¹⁸

In March 1958, as a Senator, he pleaded the case of Indian neutrality by comparing it with that of the United States in the nineteenth century.¹⁹ In the same year, he had joined Senator Sherman Cooper, a former U.S. Ambassador to India, in sponsoring a resolution in the Senate pledging the United States' support to India's economic planning.²⁰

No struggle in the world today deserves more of our thought and attention than the struggle between India and China for the leadership of the East, for the respect of all Asia, for the opportunity to demonstrate whose way of life is the better...India follows a route in backing with human dignity and individual freedom, with only haphazard assistance from this country (U.S.). Red China represents the route of regimented controls and ruthless denial of human rights.²¹

As from the very beginning he was interested in the welfare and, development of India, America's South Asian policy underwent a change more so because of the influence of his Harvard advisers.²² He laid stress on the Indian leadership of South East Asia²³, which created suspicion even in the minds of America's permanent allies. The United States came closer to India when in November 1961 Nehru paid a visit to Washington.

18. See Khalid Bin Sayeed, "Pakistan's Foreign Policy: An Analysis of Pakistani Fears and Interests", *Asian Survey*, vol. IV, No. 3, March 1964, p. 753.

19. Ajit Bhattacharya, "Nehru's Third Journey to America", *The Hindustan Times*, 4 November 1961.

20. Zubeida Hasan, No. 12, p. 333. See also D.R. Mankekar, "Late President Kennedy's Interest in India", *The Indian Express*, (New Delhi), 27 November 1963.

21. *Ibid.*

22. One of President Kennedy's advisers, Chester Bowles, always believed very deeply that there can be "no real stability in the world" unless New Delhi and Washington succeed. "The dual success of these two great democracies is essential" if people want to live in a world that "we can remotely call rational". Khalid Bin Sayeed, No. 15.

23. After completing his world tour in May 1961, Vice-President Johnson told newsmen in Washington that he had conveyed a message from President Kennedy to Prime Minister Nehru that exhorted the latter to assume the leadership of South-East Asia. Johnson's reported comment in *The Pakistan Times*, May 26, 1961, and *The New York Times*, June 10, 1961. Cited in M.S. Venkataramani, and H.C. Arya, No. 1, p. 111.

In view of Kennedy's supportive attitude towards New Delhi, Nehru was bound to make some friendly gestures. In a televised conversation with Mr. Stevenson, U.S. Ambassador U.N., he is said to have remarked that "Russia's resumption of nuclear tests was very bad from every point of view". He also said that Russia behaved "in a brutal manner" in Hungary in 1956.²⁴

GOA'S LIBERATION

The relations between the two deteriorated when in December 1961, the United States took an unpopular stand. In sharp contrast to her stand on the West New Guinea issue, America bitterly criticised the Indian action in Goa. On December 22, 1961, Mr. Adlai Stevenson, America's permanent representative at the U.N., repeated his charge that "India had committed aggression in the Portuguese enclaves of Goa, Daman and Diu". It seems Washington's action was a step towards the revival of NATO, which was in a shambles at that time. Since it was felt in India that "what was right" for America "in the 18th century" was not being considered as justified "for India in the 20th century", the American support to the continuation of colonial rule was met with resentment in New Delhi. But the United States did not pay any heed to the Indian reaction and continued to demonstrate her dissatisfaction. She "was so highly incensed" that the meeting of the International Aid Consortium in January 1962 for consideration of economic assistance to India was postponed. Even this did not satisfy Washington. In June 1962 along with the United Kingdom, America introduced a new resolution in the Security Council on the Kashmir issue. When Kashmir was debated, a U.S. Senate Committee is reported to have voted for a 25% cut in American aid to India. "Menon's presence in the Security Council had much to do with it", since a large number of Americans "found him unbearable".²⁵

In the fall of January, President Kennedy is reported to have advised Mr. Nehru to accept World Bank President Eugene Black as mediator on the Kashmir issue. But, unlike Pakistan, India rejected the proposal outright. This annoyed Kennedy, but in view of the growing threat of China on the Indian border, stoppage of economic assistance was not thought desirable. When the war broke out between India and China in October 1962, America came out in India's support and gave all possible help. In

24. *The Daily Telegraph*, London, November 13, 1961. See also *The New York Times*, November 12, 1961.

25. R.S. Gupta, n. 1, p. 48.

late November 1962, with the Indian army near collapse, Nehru had written to President Kennedy asking for the immediate delivery of fourteen squadrons of U.S. fighter planes to protect the northern Indian cities, and three squadrons of bombers to enable the Indian Air Force to attack the Chinese communication lines.²⁶ But three days after the receipt of the letter, China declared a unilateral cease-fire. The day on which the cease-fire was declared, American and British missions left for India to study Indian military needs. The visit of a joint U.S.-commonwealth Air Mission to India towards the end of January 1963 and reports in the American Press concerning an air umbrella for India were regarded as proof of a massive American commitment to India.²⁷ During the war, President Kennedy, in a confidential communication, went to the extent of even urging Ayub Khan, the then President of Pakistan, to make a friendly gesture to India in its hour of great peril. He advised him to inform Nehru privately that Indian troops posted in Kashmir could be safely withdrawn to fight against the Chinese invaders. "Such an offer would with the goodwill of the Indians" and "probably put them in a favourable frame of mind for a settlement on Kashmir", Kennedy said.²⁸ In spite of Pakistan's protest against the delivery of military hardware to India and New Delhi's support to China's admission²⁹ to the United Nations on October 27, 1962 at a time when the "Himalayan snows were stained red with Indian blood", America continued to supply military and economic assistance, and on February 16, 1963, the joint U.S. Commonwealth Air Mission "recommended the setting up of a radar belt all along India's 3000 mile-long Himalayan border with Peking". It was also made clear by President Kennedy's policy planning adviser, Mr. W.W. Rustow, that the U.S. would continue to assist India both economically and militarily irrespective of the settlement of the Kashmir dispute. A new lease of life was given to relations between the two countries, when President Radhakrishnan visited the United States in June 1963. Effective American assistance was assured to India. President Kennedy is said to have declared that "India could count on the warm sympathy and effective assistance" of Washington in her "development and defence".³⁰ The assistance was reaffirmed in a joint communique issued on June 30, 1963 at the conclusion of the talks between the U.S. President and the British Prime Minister at

26. Chester Bowles, *Promises to Keep: My Years in Public Life 1941, 1969* (I.B. Publications, Bombay), First edition, 1972, p. 474.

27. See M.S. Venkataramani and H.C. Arya, no. 2, p. 116.

28. Cited in *Ibid.*

29. R.S. Gupta, no. 1, p. 49.

30. *The Times of India*, New Delhi, June 7, 1963.

Birch-Grove.³¹ In August 1963, America made another friendly gesture when a spokesman of the U.S. Embassy in Karachi declared that Washington wanted to be friendly with both India and Pakistan and would not take sides with either on the Kashmir issue.³²

There is no doubt that the helping attitude of the United States created a cordial atmosphere for the smooth development of friendly relations. But in August 1963, some minor issues marred the image of India in the minds of some Congressmen. When the Indian public³³ and press began to protest against an agreement signed between India and the U.S. for setting up a powerful transmitter in the Calcutta area for use by All India Radio, in return for time for Voice of America broadcasts, and the proposal for joint exercises by the Indian Air Force with American and British counterparts, Mr. Nehru is reported to have sought some modification³⁴ in the agreement on the plea that it was not in consonance with the policy of non-alignment, which led some Congressmen to oppose aid to India on this very ground. According to the Times of India News Service, Mr. Nehru also referred to the continuing delay over American aid to Bokaro project.³⁵ Since the American Ambassador to India, Mr. Chester Bowles, was not in favour of stoppage of American assistance to India, he rushed to Washington in the fall of 1963 and pleaded the Indian case strongly. But, as ill luck would have it, Kennedy was assassinated. However, on Bowles' persuasion the new President is said to have expressed the desire to continue the policies and practice of his predecessor with respect to India. It was clear in a letter given to Nehru by Bowles.³⁶

In view of Pakistan's growing intimacy with China³⁷ and her intention

31. Zubeida Hasan, no. 12, p. 335.
32. *The Indian Express* (New Delhi), 3 August 1963.
33. The Delhi Youth Federation staged a two-hour demonstration in front of the Prime Minister's house to protest against the deal. *The Statesman* (New Delhi), 30 July 1963. Mr. Nehru assured angry M.P.s. that V.O.A. pact would go if not revised. *The Hindustan Times* (New Delhi), 4 September 1963.
34. See *The Times of India* (New Delhi), 4 August 1963, *The New York Times* 4 September 1963 and *The Daily Telegraph*, 10 October 1963.
35. *The Times of India*, *ibid.*
36. *The Pakistan Observer* (Dacca), 14 December 1963. See also *The Times of India* (New Delhi), *The Statesman* (New Delhi) and the *Indian Express* (New Delhi), 13 December 1963.
37. Pakistan signed a trade agreement with Peking in January 1963. Another agreement was reached in the sensitive field of Civil Aviation in August 1963, under which Pakistani planes were accorded landing facilities in Canton and Shanghai in exchange for permission for Chinese jets to use the American-built Dacca airstrip. The U.S. State Department considered that particular agreement "an unfortunate breach of the Free World solidarity" and postponed the extension of a loan of \$4.3 million for further improvements and extension of the Dacca airport. George J. Lerski, no. 3, p. 410. See also *Pakistan Horixon*, vol. XVI, Third Quarter 1965, p. 296.

to cement her relations with the adversaries³⁸ of the United States, Washington, in spite of its differences with New Delhi on the Kashmir issue, continued economic assistance to India. On December 5, 1964, after having been re-elected the President of the United States, Johnson said that he wanted the U.S. Ambassador in New Delhi, Mr. Chester Bowles, to tell Indian Government officials of America's concern in India's problems and prospects when he returned to India.³⁹ Though the American decision to put off the Indian Prime Minister's visit⁴⁰ to the United States in April 1965 affected Indian prestige to a large extent, in July 1965 Washington pledged \$940 million to India well in advance of authorization by Congress.⁴¹ In this connection it must be noted that Washington also cancelled the visit of the Pakistani President in the same way. But as *The Washington Post* editorially commented :

The President in calling off what was to have been the Indian leader's first visit to America in June did him double injury. First the abrupt inconvenience of being disinvited. Then equating Shastri's visit with that of Ayub's whose Pakistan these days has been dozing up to America's enemy Communist China as fast as India has been shying away from her.⁴²

However, Washington defended its action on the ground that in the month of June it would not be possible for President Johnson to get spare time because of his other engagements. Since the United States made her position clear, and since President Johnson, through a personal letter, informed Mr. Shastri to visit Washington at any time at his convenience, New Delhi took the postponement lightly.

When war broke out between India and Pakistan in September 1965, the United States adopted a neutral attitude and realized the necessity of stopping the fighting. Like Moscow, Washington felt that the war would

38. In 1964, in London, Ayub Khan made it clear that should there be any serious confrontation between China and the U.S. over North Vietnam, Pakistan, in spite of her SEATO obligations, would not get involved. Besides, she began to build friendly relations with Sukarno's Indonesia and even with Ho Chi Minh's North Vietnam. George J. Lerski, *ibid*, pp. 410-11.

39. *The Indian Express* (New Delhi), 7 December 1964.

40. The Indian Ambassador in Washington conveyed to the U.S. State Department of India's resentment at the discourteous manner in which the Prime Minister's visit to that country was unilaterally put off without prior consultation. Mr. B.K. Nehru was reported to have expressed "dismay and displeasure" at the "abrupt, inexplicable and discourteous way" in which the Prime Minister's visit was postponed. *Patriot*, (New Delhi), 19 April 1965.

41. George J. Lerski, no. 3, p. 412.

42. Quoted in the *Dawn* (Karachi), 23 April 1965

encourage China to fish in troubled waters. So in collaboration with the U.S.S.R. in the Security Council, the United States contributed to the closure of fighting. When China started making threatening noises on the Indian border, the war assumed a new dimension. At that time it was felt in some political circles that Peking's entry into the war on the side of Pakistan would bring Washington on the Indian side.⁴³ Besides, like the U.S.S.R., the United States was in favour of settlement of the dispute by peaceful means on the negotiating table. The American attitude remained one of support even when Mrs. Gandhi expressed identical views on Vietnam with the French Government in Paris in March 1966 while on her way to Washington.⁴⁴ The U.S. President, Johnson, apparently ignored it and assured Mrs. Gandhi of his country's deep interest and long-term commitment to India's economic development.⁴⁵ Besides, the President proposed the setting up in India of an Indo-American Foundation with Indian and American directors with a capital of 300 million dollars. Thanking Johnson for his suggestion on this establishment, Mrs. Gandhi said that "it would bring into closer union the spirit of our two countries" and that every effort "to sustain and encourage this people-to-people partnership is a good thing."⁴⁶ The relations between the two were cemented when on 15 June 1966, Mr. Chester Bowles reaffirmed his country's support to India in the event of a new Chinese attack, which, he said, was not likely, but could not be ruled out.⁴⁷

STAND ON VIETNAM

As a matter of fact, the situation which was instrumental in America's leaning towards New Delhi in face of her criticism on the Vietnam issue may be said to have been created by the hostile attitude of various countries, including America's allies, towards the Vietnam problem. Since the relations between New Delhi and Peking were strained, it was expected in certain quarters that India could be made to adopt a sympathetic attitude towards the American stand. Surprisingly even Pakistan did not side with the Americans on this issue. When India could not be made to toe the lines of Washington, America began to look towards Pakistan and declared her decision to supply tanks to Rawalpindi through Italy.⁴⁸ But

43. See for details this author's article in the *Foreign Affairs Reports* August 1972.

44. *The Observer* (London), 27 March 1966.

45. *The Statesman* (New Delhi), 31 March 1966.

46. *Free Press Journal* (Bombay), 30 March 1966.

47. *The Hindustan Times* (New Delhi), 16 June 1966.

48. *The Times* (London), 13 May 1968

the Russian attitude towards the sub-continent took a new turn in July 1968, when she agreed to sell arms to Pakistan on the same terms on which she was selling to India. In the same month, a U.S. delegation reached India and found a cordial atmosphere in the sense that the Russian move was being resented in every political circle in India. Under these circumstances, the United States directed both Italy and West Germany not to sell tanks to Pakistan.⁴⁹ At that time a cartoon appeared in *The Hindu* (Madras) showing Ayub Khan and Kosygin rolling out a red carpet for the American team headed by the Under Secretary of State. The point of drawing was that how New Delhi's resentment over the Soviet decision to sell arms to Rawalpindi was bound to ensure the Americans an eager and warm reception in India that they probably could not have counted on otherwise. But as an India daily commented :

In the Dullesian era this would have been heartening news for the State Department and India's resentment at the Soviet move would have been made much of, and even encouraged by offers of more American aid to keep the balance. The U.S. Administration is now playing it cool.⁵⁰

By November 1968, the relations between the two fluctuated between normal and good. But in the fall of November the United States and Turkey agreed, in principle, to the latter giving 100 Patton tanks to Pakistan in exchange for modern tanks from the United States.⁵¹ While commenting on this move, the Defence Minister of India, Mr. Swaran Singh, said that "the U.S. was making Pakistan to adopt a more intransigent attitude towards India".⁵² When Mr. Nixon visited New Delhi in August 1969, the Prime Minister, Mrs. Indira Gandhi, took up the issue with him and warned against resumption of U.S. arms aid to Pakistan.⁵³ During his visit Nixon made some friendly gestures⁵⁴ but did not pay heed to the Indian warning. This state of affairs led New Delhi to consider the move to establish ambassador-level relations with North Vietnam,⁵⁵ to make the

49. *Christian Science Monitor* (Boston), 26 July 1968.

50. *The Tribune* (Ambala Cantt) 30 July 1968.

51. *National Herald* (New Delhi), 22 November 1968.

52. *The Statesman* (New Delhi), 22 November 1968.

53. *The Times* (London), 1 August 1969.

54. President Nixon declared the U.S. Government's willingness to assist the people of India in their "heroic struggle to make the world's" largest democracy "a model of orderly development and progress". *Times of India* (New Delhi), 1 August 1969. He is also said to have assured continued economic assistance. *The Hindustan Times* (New Delhi), 1 August 1969.

55. *The Hindustan Times* (New Delhi), 24 October 1969.

Americans realize Indian resentment over the U.S. arms supply to Pakistan. Reacting to it, a prominent U.S. Congressman moved to block aid to India.⁵⁶

The relations between the two further deteriorated in February 1970, when the Government of India ordered the closure within three months of all information and cultural centres run by foreign diplomatic missions in non-consular cities in the country. The American Ambassador to India, Mr. Keneath B. Keating⁵⁷, is understood to have taken a serious view, and Mr. P. Rogers⁵⁸, American Secretary of State described the Indian decision as "unfriendly" to Washington, adding the hint that "it may impair the cordial relationship between New Delhi and Washington". Since in 1970 Mrs. Gandhi's minority Government was being backed by the Communists, the relations continued to deteriorate day by day. Mr. Dinesh Singh's reported statement on Vietnam⁵⁹ and his criticism of America's stand on Cambodia,⁶⁰ in March and May respectively, led the United States to make a cartographic aggression⁶¹ on India and to pursue a policy of supplying lethal arms to Pakistan.⁶² The Prime Minister, Mrs. Gandhi, sharply reacted on the American decision and made it clear to Rogers in New York that the arms supply to Pakistan could damage Indo-U.S. ties.⁶³ Writing from the U.S.A., Krishna Bhatia of *The Hindustan Times* said that "another winter of mutual discontent started between the U.S. and India".⁶⁴ *The Guardian* described the relations as "democracies in conflict".⁶⁵

BANGLADESH CRISIS

When the civil war started in East Pakistan (now Bangla Desh) in

56. *The Times of India* (New Delhi), 31 October 1969.
57. *The Hindu* (Madras), 25 February 1970. See also *The Hindustan Times* (New Delhi), 27 February 1970.
58. *The Times of India* (New Delhi), 4 March 1970.
59. The U.S. State Department took strong note of the passage in Mr. Dinesh Singh's statement which described the Vietnam war as a "heroic struggle of the people of a small country to preserve its independence against the world's greatest military power". The passage also hinted at the recognition of the Provisional Government of South Vietnam (set up by the National Liberation Front and the Viet cong). *The Hindu* (Madras), 31 March 1970.
60. Mr. Dinesh Singh regretted the entry of U.S. forces.
61. In August 1970, the U.S.I.S. publication "United Nations at 20" gave the area of India as 3046232 square kilometres. The area mentioned excludes 'Jammu and Kashmir' and was the same as published in table 19 of the U.N. Statistical Year Book 1965.
62. In October 1970, the U.S. Government decided to give Pakistan some F-104 and B-57 aircraft and ground equipment other than tanks. *The Times of India* (New Delhi), 9 October 1970. See also *The Statesman* (New Delhi) 22 October 1970.
63. *The Tribune* (Chandigarh), 25 October 1970. See also *The Statesman* (New Delhi), and *National Herald* (New Delhi).
64. *The Hindustan Times* (New Delhi), 12 November 1970.
65. *The Guardian* (Manchester), 23 November 1970.

March 1971, the relations between India and the United States fluctuated between bad and worse. The Indian resentment reached its peak, when in June 1971, *The New York Times* revealed that a Pakistani ship, the Padma, sailed from New York to Karachi with defence equipment. The paper added that another Pakistani ship, the Sunderbans, had left earlier with a similar cargo.⁶⁴ Thirty-five Indian M.P.s from various parties demonstrated outside the U.S. Embassy to protest against the supply of U.S. arms to Pakistan⁶⁵, and Mr. Jagjiwan Ram, the Defence Minister, called the U.S. action "unfortunate."⁶⁶ Even the U.S. Ambassador to New Delhi is said to have threatened to quit on the arms issue.⁶⁷ The Government of India sent a written protest to the U.S.A. against the continued supply of arms. The note, it was learnt, drew the U.S. Government's attention to the near-war situation created on the subcontinent by Pakistan's action in East Bengal and by the influx of refugees into India.⁶⁸ When the United States did not pay heed to the Indian protest, the Indian Foreign Minister, Mr. Swaran Singh, severely attacked the American President, Mr. Nixon, for "Condoning genocide and atrocities in East Bengal".⁶⁹

HOSTILE ACTS

Since in the pre-Nixon era Red China was to a large extent responsible for bringing New Delhi and Washington closer to each other, and since this factor was eliminated by Henry Kissinger's visit to Peking in 1971, India became suspicious about the policies of the United States, and more so, when William P. Rogers, the American Secretary of State, told the Indian Ambassador to the U.S.A., Mr. L.K. Jha, that Washington would not come to the help of India if she was attacked by Peking in future. As it is clear that Pakistan played quite an important role in arranging Henry Kissinger's visit to Peking, it was natural on the part of Washington to reward Rawalpindi suitably by extending military and diplomatic support. This state of affairs annoyed the Government of India and led it to declare the steps of Washington as "hostile acts".⁷⁰

When Mrs. Gandhi visited the United States in the beginning of November 1971, she apprised Mr. Nixon of the deteriorating situation in the subcontinent, and told him about India's concern over the American

66. *The Guardian* (Manchester), 23 June 1971.

67. *The Statesman* (New Delhi), and *The Times of India* (New Delhi),

68. *The Sunday Standard* (New Delhi), 27 June 1971.

69. *The Times of India* (New Delhi), 4 July 1971.

70. *The Statesman* (New Delhi), 13 July 1971.

arms supply to Pakistan. But it brought no fruit. The President put his own proposal to withdraw troops from the Indo-Pak border, which was rejected outright by Mrs. Gandhi.⁷¹ The visit of Mrs. Gandhi proved a failure in the sense that she could not prevent the Nixon Administration from encouraging Pakistan to adopt repressive policies in Bangla Desh and subversive activities on the Indian border in Kashmir. The result was that Pakistan declared war against India in the beginning of December 1971, which in spite of Washington's vigorous support to the military junta of Islamabad, resulted in the humiliating defeat of Pakistan and disintegration of the country. If the disclosures of Jack Anderson are believed, America's entry into the war on the side of Pakistan would have caused its prolongation. America's sending of her Seventh Fleet to the Bay of Bengal during the war was a clear sign of enmity. The Indian Ambassador to the U.S.A. criticized this move which led the U.S. Government to threaten Mr. L.K. Jha with expulsion.⁷⁴

There is no doubt that during this crucial period India's attitude, in sharp contrast to that of America, was conciliatory. The Government of India tried to the best of its ability to make the Nixon Administration understand that Washington's support to Islamabad in view of the massacre of civilians in Bangla Desh was not desirable, but Mr. Nixon continued to dance to the tune of Pakistani generals. Under these circumstances, America lost the friendship of the most populous democracy of the world. Moreover, it exposed America's conspiracy under the slogans of democracy, free world solidarity and Wilsonian concept of national self-determination. However, at present, both New Delhi and Washington have started to realize the importance of normalization and cementing their relations. But it seems that the American decision to supply war material to Pakistan is likely to frustrate the move of true supporters of Indo-American friendship for improving relations. However, in view of the fact that Pakistan has been cut to size and India has become India plus something more, and in view of some radical changes in America's China policy, it appears that Washington will not take as much interest in the sub-continent as it did in the past.

71. *The Times* (London), 13 July 1971 and *The Hindu* (Madras), 20 July 1971.

72. *The Hindustan Times* (New Delhi), 8 August 1971 and *The Amrit Bazar Patrika* (Calcutta), 9 August 1971. It was reported in the press that even Senator Edward Kennedy charged the Nixon Administration with following 'politically oriented' and 'senseless' policy toward East Bengal (now Bangla Desh). *Patriot* (New Delhi), 7 August 1971.

73. *The Times of India* (New Delhi), 6 November 1971.

74. *The Hindustan Times* (New Delhi), 8 January 1972.

MILITARY AVIATION IN THE SEVENTIES

SQUADRON LEADER K S TRIPATHI

THE 1960s were the years of space-technology. A generation of spacecraft, intercontinental ballistic missiles (ICBMs), anti-ballistic missiles (ABMs) and multiple independently targetable re-entry vehicles (MIRVs) dominated the scene throughout the decade. Under the shadow of Apollos and SS-9s, aeronautical technology languished. The "one small step" of Neil Armstrong on the moon on 20th July 1969 was the culmination of the achievements of the sixties but this small step was such a "giant stride for all mankind" that it almost dwarfed the achievements of the aviation industry.

It is not that the sixties were barren of progress in aeronautical technology but what little was achieved was not of a standard worthy of marking out this decade as an era of aviation development. Of the types of military aircraft produced in the sixties in the United States two in particular have become very controversial and bring little credit to this decade—these are the cargo-carrying giant C-5A, popularly known as Galaxy, and the F-111 fighters.

These aircrafts were manufactured under what was then known as the total-package procurement contract, under which a fixed price was set for all phases of a new programme. The manufacturers were given non-negotiable performance specifications and they strove to meet them without any guidance or counselling from the users. The result was that the manufacturer either failed to achieve these specifications or erred on the plus side and overshot. The United States Air Force (USAF) had laid down a certain empty weight specification for C-5A and these were non-negotiable. When the aircraft was ready it was discovered that the empty weight exceeded the specifications by some 10,000 lb. Lockheed-Georgia, the manufacturers, were obliged to slash down the extra weight under the terms of the contract and this resulted in trimming the C-5A's wing skin thickness to a point where the aircraft, for all the money invested in its production, will experience fatigue problems throughout its life cycle. The production of the F-111 was similarly plagued by changes resulting in an inherent instabi-

lity of the aircraft which has already claimed many lives of its pilots. During the Vietnam war several F-111s just disappeared without any explainable reason. F-111s were grounded for a thorough recheck but it is doubtful if investigations at this stage would help the aircraft much in achieving stability. Like the C-5A, it too will continue to suffer from its inherent shortcomings.

SOVIET ACHIEVEMENTS

The Soviet Union did not permit its space programme to impede its aeronautical developments. Side by side with Cosmos, Luna, Soyus, Mars and Zond space projects, the Soviet Union continued to develop its ballistic missiles and aeronautical technology. While she added Griffon (SA-5) and Galosh (SA-7) ABMs to her defences and SS-8s, SS-9s, SS-10s, SS-11s, and SS-13s ICBMs to her strategic offensive missile force, she produced several new types of aircraft both for defence and offence purposes. At the Tushino Air Show held in July 1961, the Soviet Union surprised the world by the display of a new series of bombers, and six years later at the Domodedovo Air Show in July 1967, she dazzled the world by bringing out no fewer than twelve new types of fighters/interceptors. Then of the twelve new designs shown at Domodedovo were tactical military aircraft. Six of these were developed by the team headed by the veteran designer Artem Mikoyan and another three by Pavel Sukhoi's design bureau. The Mikoyan-developed variable-geometry fighter, with an external appearance almost similar to General Dynamic's F-111, is a twin-engined aircraft with an attack speed of Mach 2.8 and a capability of reaching Mach 3 for short periods.

The most remarkable developments of late have been the production of a supersonic swing-wing bomber and a new version of MIG. The latest issue of *"Jane's All the Worlds Aircraft"* published in September 1972 by Messrs Sampson Low, Marston Company of London mentioned that the new Soviet fighter was the fastest in the world and that no American aircraft was capable of matching its speed and manoeuvrability. Expressing his indignation over the Western countries, which did not follow the Russian example of acquiring the latest weapon system, Mr. John W.R. Taylor, the editor of *Jane's All the World's Aircraft*, said, in the foreword to the publication, "the wisdom of accepting second best has always been dubious in military affairs".

Giving a photograph of the MIG 23, which is now also operated by the Egyptians, Mr. Taylor said, "it was frustrating for crews of Israeli Phantoms to realise that even the best missile-armed fighters supplied by the Americans

could not enable them to challenge a MIG-23 flying at its normal operational cruising speed and height. The Israelis are not convinced that even the new USAF plane—FN-14 Tomcat will be fast enough to catch the MIG 23”.

The drawings published in the *Jane's* of the latest Russian supersonic bomber code-named “Backfire” was said to be partly based on the known characteristics of the earlier TU-22 “Blinder” supersonic reconnaissance bomber. The illustration shows that the outer edges of the wings are hinged. It is believed that the Soviet Union may have started quantity production of this aircraft, which is capable of flying at Mach 2+ speed and is believed to be capable of reaching the United States. The “Backfire” is rated capable of operating against targets upto 4000 miles (6,400 KM) without refuelling. It means that in the event of war the Backfire can strike targets in the United States. The bomber is believed capable of penetrating enemy air space at lower altitudes at relatively high speeds. It is likely to be armed with air-to-surface missiles and bombs and to be equipped with electronic devices for foiling defence radar and anti-aircraft weapons.

The Backfire has variable-geometry wings and its overall span with full wings is 70 feet and its overall length is 130 feet. The existing Blinder which has the same dimensions and is also capable of Mach 2+ speed, however, can fly 1300 miles per hour at a ceiling only of 60,000 feet. In course of time the Backfire will replace the existing fleet of 195 aging long-range Soviet bombers, consisting of Blinder, Bounder, Bear and Badger types.

REVIVAL IN 1970s

The advent of the 1970 was accompanied by a revival of aeronautical development in the United States. In the commercial field the revival was heralded by the arrival of the three new wide-bodied transport aircraft, the Boeing 747, the McDonnell Douglas DC-10 and the Lockheed L-1011. In the military field the resurgence of aeronautical technology was marked by the initiation of two important projects, the B-1 bomber and the F-15 air superiority aircraft. Plans for several new projects were also mooted. An equally important development marking the revival of military aviation was a thorough reorganisation and streamlining of the Aeronautical Systems Division (ASD) of the Air Force Systems Command.

The Aeronautical Systems Division, created at the time of the separation of the Air Force Systems Command from the Air Material Command, geared itself to meet the new challenges and adopt new management concepts. Still suffering from the trauma of the crises which overtook the F-111, the

C-5A and the Short Range Attack Missile (SRAM), the ASD redeemed itself from the inflexible philosophy of the past and adopted a more pragmatic and dynamic approach. The emphasis at the ASD shifted from a position of non-interference with the contractors to a position of total Air Force involvement in the development projects. Earlier there was a minimum of communication between the companies and the military, expecting the former to reach what were apparently unattainable goals and leaving the latter generally uninformed as to the progress or the problem. Under this concept costs tended to shoot up and the structural integrity of the aircraft was sacrificed to meet rigid weight specification. As a consequence of the unsatisfactory state of affairs arising from this system it was decided that the USAF and the ASD should return to their role as a day-to-day manager and overseer of the development projects being conducted under Air Force contract so that problems are tackled early. Another cardinal principle accepted now is the necessity for absolute structural integrity even if it means paying the price in weight for the extra pounds of weight of the aircraft.

Besides keeping a sharp lookout on problem-ridden projects like the F-11 and the C-5A, the Aeronautical Systems Division has the following goals:—

- (a) To reorganize military departments concerned with the procurement of aircraft and to streamline the system of contracts with a view to evolving a system of total involvement with the production of new aircraft.
- (b) To initiate development projects on new types of aircraft, avionics and associated weapon systems both in the tactical and strategic field with a view to replacing the troubled F-111 and aging B-52 bombers. Two important projects already initiated are the F-15 air superiority fighter and the B-1 supersonic bomber.

In pursuance of its first goal the Aeronautical Systems Division has evolved flexible management patterns aimed at matching the management required to the type of programme involved. For example, large "Super System Project Offices" were created for major Programmes such as the F-15 and the B-1, with detailed daily consultation between the system project officers and contractors. For an on-the-spot study of the problem and counselling, the ASD maintains a detachment of its system project office at North American Rockwell's Los Angeles Division, where the B-1 is under development. The main benefit derived from putting a system project

office at the plant was a significant reduction of paper work—by about 75%. As a result of substituting people for paper, the Air Force is aware of the progress and problems of the B-1 programme much sooner than it was possible under the previous reporting system.

BOMBER OF THE FUTURE

The development of an advanced manned strategic bomber was long overdue. For over two decades the B-52 bombers valiantly shouldered the burden of big bombs and spearheaded the strategic offensive force of the United States. They flew at a speed of 650 mph at a height of 50,000 feet and carried two Hound Dog air-to-surface missiles, one Quail decoy missile and thousands of pounds of bombs each. In October 1962 the last of the B-52H bombers rolled off of the Boeing assembly lines and since the emphasis by then had shifted to the ballistic missiles no new bombers were planned for several years. The discovery of the Soviet bomber Backfire and the realization that preoccupation with ballistic missiles had left a wide gap, made the planners very uneasy. It was at this stage that the idea to produce an advanced manned strategic bomber was conceived.

The B-1 which is planned to be the bomber of the future, is expected to test-fly in April 1974, some 52 months after the project was initiated in January 1970. The United States Air Force has earmarked a fund of \$444.5 million in the financial year 1973 to develop the B-1. It is estimated that before the B-1 becomes fully operational it will take some four years from the date it is first test-flown. The B-1, therefore, is likely to enter squadron service in 1978. Projected unit cost of production versions is \$ 35.2 Million in 1971 (dollars) based on a purchase of 251 aircraft.

The life of the aeroframe design of the B-1 is 25 years, which would give it an operational capability well beyond the year 2000. The North American Rockwell, the manufacturers of the aircraft, claim that the B-1 bomber would be one of America's key strategic deterrent forces in the twenty-first century. It is being planned to fly high-level missions at twice the speed of sound and attain nearly sonic speed at minimum altitudes. The aircraft will have swing wing, giving it great performance versatility. It would be able to carry nearly as much payload as the aging B-52, and would be nearly three times faster at altitudes and yet will be able to utilise much shorter runways than the B-52. The B-1 will also have the forward-looking and terrain following radars and Doppler systems which are already flying as a unit on the FB-111. The B-1 would carry the proposed short range bomber defence missile (SRBDM) which would be capable of

defending it against attacking interceptors or their air-to-air missiles even if the latter already had been launched. The SRBDM would also be capable of engaging surface-to-air missiles fired against the B-1. The B-1 is designed to have a reaction time of 4 minutes in which time it will be able not only to take off, but also to get far enough away from its base to avoid the effects of a nuclear blast there.

The appearance of the Soviet supersonic variable-geometry Tupolev Backfire on the strategic scene has necessitated a close look at the development of an air superiority aircraft. Under a unique "milestone concept" contract, developed by the Aeronautical Systems Division (ASD), McDonnell Douglas are developing a new air superiority aircraft, known as F-15. Simply stated, the concept means that under this system McDonnell Douglas are to successfully reach predetermined technical targets before proceeding to the next phase of the programme.

The ASD has specified a dash speed of Mach 2.5 for this aircraft and the prototype tests indicate that the aircraft will achieve the speed specification without difficulty. The first flight of the No 1 prototype was made on 27 July 72 at the Edwards Air Force Base. The aircraft, powered by YF-100 pre-production engines achieved a speed of Mach 2.0, which is 80% of the specification. There will in all be 12 prototypes to complete all tests before the aircraft is handed over to the USAF. According to Peter Garrison, McDonnell Douglas chief experimental pilot, the F-15 test flights have confirmed the two characteristics of its air-superiority role—all round visibility and good turn performance. The prototypes have been able to consistently outmanoeuvre F-4 chase aircraft in turns.

The USAF also plans to begin the modernization of the Aerospace Defence Command (ADC) in response to the Soviet strategic bomber, the supersonic Tupolev Backfire variable-geometry aircraft, which has an unrefuelled range of 4,300 miles. Backfire prototypes are now completing the development phase and the production of operational aircraft has now been started. Well over 20 aircraft are believed to have already been produced.

MODERNIZATION PLAN

The modernization plan of the ADC calls for three interrelated steps:—

- (a) Procurement of an improved manned interceptor (IMI), probably a variant of the single-place McDonnell Douglas F-15 air-superiority fighter already on order for the Tactical Air Command, al-

though the ADC in the past has favoured the two-place Navy Grumman F-14 variable-geometry fighter.

- (b) Quantity procurement of the Boeing E-3A airborne warning and control system (AWACS) aircraft, an eight-engined modification of the 707 jet transport, for early warning and control of the IMI force.
- (c) Construction of an over-the-horizon backscatter (OTHB) radar system for extreme long-range detection and warning.

The Navy's Grumman F-14A, also known as the Tomcat, is a strong contender for the IMI role. It is a variable-geometry, highly advanced air superiority fighter. Designed to afford the crew maximum visibility outside the cockpit it is capable of withstanding high G loads. F-14 proponents contend that the 50-mile detection range of the F-15 radar is insufficient and that it will be incapable of picking up bombers making low-level penetration attacks. The F-14, with a 100-mile-range radar, is also equipped with the long-range Hughes Phoenix air-to-air missile and has a lock-down radar capability. Be that as it may, the ADC sorely requires a new air craft as it primarily relies on the General Dynamics F-106 interceptors, which are of 1950s-era. These aging aircraft are no match to the Backfire or any escorting or reconnaissance aircraft such as the Mach 2.5 plus Mikoyan MIG-23 Foxbat.

Three European countries, Great Britain, Italy and Germany, have joined together to develop a multi-role combat aircraft (MRCA). Main development contract for this aircraft was signed in August 1972 between the Panavia industrial consortium, a company of airframe constructors of the three concerned countries set up in March 1969, and the NATO MRCA Development and Production Management Agency (NAMMA), which is a governmental organisation consisting of the three governments. The MRCA is planned to be a Mach 2 variable-geometry aircraft. Originally it was estimated that more than 900 aircraft would be ordered by the various Air Forces and this estimate placed the unit price of the MRCA at \$ 4.42 million in 1970. However Germany now plans to buy only 320 aircraft against its original plan to buy 420 and this will affect the price line. The RAF still plans to buy more than 380 and the Italian Air Force is holding steady at approximately 100 aircraft. The current timetable calls for completion of the first prototype airframe in early 1973, followed closely by the installation of the Rolls-Royce/MTU RS 99 engine. A total of nine pro-

totypes is planned and programme of producing them is likely to continue till 1975.

The AX programme of the United States Air Force is designed to develop an aircraft with exceptionally low-speed manoeuvrability at low altitudes for accurate ordnance delivery in support of closely-engaged ground troops and a relatively high rate of survivability, including cockpit armour and structural redundancy. The Northrop A-9A and the Fairchild Industries A-10A are competing for the eventual selection of the AX programme. Ten aircraft have been ordered for the first phase of the AX programme and these are likely to be delivered by mid-1975. A basic guideline in the programme has been a projected unit price of \$ 1.4 million at the 1970 price index and based on a total purchase of 600 aircraft.

NEW FIGHTER

The Dassault-Brequet engineers of France have initiated definite studies on a new fighter aircraft—built around the 18,500 lb. thrust Snecma M 53 turbofan engine—to be used by the French Air Force in the 1980s. The aircraft is currently designated ACF. It may combine the features of both the Mirage F-1 fighter now in service with the French Air Force and the Mirage G 8 variable-geometry fighter that Dassault-Brequet has been testing for the past two years. The aircraft may use a fixed wing with a sweep angle of 55 degrees rather than the normal sweep angle of approximately 45 degrees. This is the result of flight tests with the G 8 fighter, which indicated that a 55 degree wing sweep would provide a number of advantages for a high performance aircraft. The aircraft is expected to fly by mid 1974.

A technological development which has exotic possibilities is that regarding the remotely piloted vehicles (RPVs). An RPV strike aircraft currently tops the Aeronautical Systems Division's shopping list. The RPV is looked upon as a means of reducing the cost of weapon systems, which has grown enormously over the past two decades. For example, a modern fighter aircraft costs between \$ 3 millions and \$ 12 millions each. By contrast, the present RPV price range is considered to be about \$ 40,000 for an expendable aircraft to possibly \$ 300,000 to \$ 400,000 for one that has a reasonable chance of being recovered. Simply by removing the man from the aircraft permits much of this cost saving. The engines and the materials used in RPV could be much inferior in quality and consequently cheap as no human life is involved. The RPVs have great potential for

reconnaissance and air-to-ground strikes in heavily defended areas, where manned aircraft would encounter high attrition rates.

Among the others on which the Aeronautical Systems Division of the USAF is contemplating development programmes are :—

- (a) The experimental hypersonic cruise aircraft developed jointly with the National Aeronautics and Space Administration (NASA). The speed range would be between Mach 8 and Mach 12.
- (b) RPVs for air to air combats
- (c) Advanced Tactical fighter. This will be the attack counterpart of the McDonnell Douglas F-15 and would replace the F-4 and F-111. It is likely to be in the squadron service by 1986.

CONCLUSION

After a period of eclipse, military aviation has staged a glorious come-back in the 1970s. Firm foundations have been laid for a variety of aircraft which will dominate the skies in the closing quarter of the 20th century and perhaps also in the opening quarter of the 21st century. The 1970s will witness the production of a much larger number of aircraft than ever before but more important than the numbers would be the wide range of missions that these aircraft would do. Appearance of new designs ranging from such exotic concepts as the remotely piloted vehicles to the production of nuclear-powered aircraft and laser-equipped fighters will not only be a possibility but a reality of this decade. The glamour and romanticism of space travel having settled down, the 1970s will mark the beginning of a close cooperation between the space and aeronautical technologies for the production of aircraft reaching up to Mach 12 speeds. The 1970s will go down in the annals of aviation technology as the decade of great revival.

A NEW ARMoured FORCE FOR INDIA

RAVI RIKHYE

THE Indian armoured forces as presently configured are unsuited for modern armoured warfare. This paper suggests a new armoured division for the warfare of the 1970s and 1980s. Additionally, it suggests that all our plains forces on the Western Front can be converted into fully mechanized formations without increasing Army expenditures.

Though because of security the author has been unable to obtain exact figures, it would appear the armoured division has 4 tank regiments, 4 mechanized infantry battalions, 3 SP artillery regiments, and a reconnaissance regiment for a total of around 16,000 men. The armoured brigades appear to have 3 tank regiments, 1 mechanized infantry battalion, 1 SP Artillery regiment, and a reconnaissance squadron, with a total of about 6000 men.

The armoured division is a balanced all-arms formation, but it has two weaknesses. One, it is much too heavy for fast-moving armoured warfare, and its inflexibility causes it to be used as a battering ram instead of cavalry. Two, its organization conforms to the doctrine of the 1960s, but this doctrine has now become obsolete. Also, there is only one armoured division. It was, of course, this heaviness and inflexibility that led to India's adopting the independent armoured brigade system. This too, however, has two faults. The brigade is also much too heavy for fast-moving warfare, and, aside from relying on the 1960s doctrine, it is an unbalanced force. As it lacks sufficient infantry and is too small a formation for true independent fighting, it is tied to the infantry divisions it accompanies. It therefore cannot achieve more than local exploitations.

Actually we have failed to appreciate correctly the Israeli doctrine and have based our ideas on an unworkable hybrid of British and German/Israeli doctrines. The Israelis use small armoured and mechanized brigades of around 3300-3500 men. They have sufficient brigades that balanced all-arms forces can be made up; additionally they have paratroop brigades (which are also airmobile trained for helicopter operations) to support the armoured forces. The need in mobile war is streamlining, and streamlin-

ing inevitably means smaller, more agile formations. The US 1st Cavalry Division (TRICAP), for instance, has a TO of just 13,000 men. The Israelis streamline their armoured forces to the extent no SP tube artillery is organic to the brigade; instead a battalion of 120mm APC mounted mortars is provided.

DEADLY WEAPON

The US has learned that the best combination for armoured warfare takes tanks, APCs, SP Artillery, and helicopters, uniting them in a way that maximizes the capability of both and vastly increases combat capability. The TRICAP division is the armoured division of the future, and recent British and US exercises only bear out what helicopter enthusiasts have been saying for some time: the missile-equipped tank-fighting helicopter is a deadly weapon. In a recent exercise in West Germany, West German tank platoons of 5 tanks with two APC mounted 20mm Vulcan (4000 rounds a minute) systems attached were pitted against two helicopter teams equipped with the TOW ATGM. The helicopters scored 18 to 1 victories over the tanks. Similarly, though the author lacks details about the British tests, he has been told that the helicopters "slaughtered" the tanks. So obviously the helicopter has a role to play in armoured warfare. But just as obviously for a wide variety of reasons we still need tanks. (Reliability, firepower, infantry support, etc.) So the answer is to combine them both.

A new armoured division for India might have 11,000 men. Its fighting arms would include :

- 3 tank regiments
- 2 mechanized infantry regiments
- 2 attack helicopter regiments
- 1 armoured cavalry reconnaissance regiment
- 8 SP Artillery batteries

A highly approximate breakdown of manpower figures is given in Appendix 1: readers will appreciate the approximate nature of these figures. Exact figures take up more time and information than is available to the author.

The tank regiments will be similar to our existing regiments, but there will be a mechanized infantry company organic to the regiment. Since mechanized infantry has to be cross-attached in any case, it is better to have a unit permanently working with the regiment. Moreover, the tank regiments are very short of manpower: a continual complaint among tank

officers is their missions exceed their manpower capability in peace and war, and the infantry will be a welcome addition. This kind of tank regiment is used in Germany and works well.

The mechanized infantry battalions will be crosstrained for airmobile operations. When they are being used as airmobile infantry, the battalion APCs will be available for use under the Dragoon concept, previously discussed in this Journal by this author. There will be three infantry companies instead of the present four.

The two attack helicopter regiments will each have three squadrons, each squadron will have 14 attack helicopters. The SA.315 Lama can be modified for this role. With its derated engine (making it very suitable for hot and high operation) and its one metric ton payload, it is ideally suited for conversion to an armed helicopter. It could be equipped with a high-velocity 30 mm cannon with 500 rounds (adequate to pierce any APC's armour and defeat the side armour of most tanks) and 6 ATGMS of the HOT variety (India has taken the option to produce HOT). Two rocket pods could be substituted for the ATGMs or both could be mixed. Though the two regiments will be identically organized, their missions will be different. One will be trained primarily for the anti-tank attack role; the other for the armed reconnaissance role, working with the armoured cavalry regiment.

BALANCED FORMATION

The armoured cavalry regiment will be organized on US lines but with equipment of the British Scorpion family. It might have four squadrons, each of three troops. Each troop will be a balanced formation with two 76 mm gun light tanks, 3 APC mounted sections of infantry (5 men each), an ATGM APC with 10-12 HOT missiles, and one APC with a 120 mm mortar.

Two changes will come with increased money being available. One, the fourth squadron in the reconnaissance regiment will be converted to an air cavalry reconnaissance squadron to enhance the reconnaissance capability of the unit. Two, the second attack helicopter regiment will lose some attack helicopters and take on some airmobile infantry further to facilitate its reconnaissance role.

Divisional artillery will consist of 8 firing batteries, six with the new Anglo-German SP 155mm howitzer when it comes into production, and two with a 175 mm gun. (Each battery with 6 guns.) Provision has been made in the tank, mechanized infantry, and reconnaissance formations for a 6-gun

platoon of APC-mounted 20mm AA cannon: these will have a dual role, also being used in the ground attack role where their fire power proves devastating. Tigercat missile batteries will come from Corps or Army Artillery and will not be organic.

There will be no brigade echelon: there will be an expanded division headquarters which will directly control the manoeuvre battalions. The added echelon merely slows down the transmission of orders, and it has been proved that a good general, particularly with the aid of first-rate communications, can easily control 9 or more manoeuvre units. Later, probably the artillery batteries will also have to go directly under division headquarters instead of having their own separate headquarters. The division will have facilities to establish alternative command posts as often the tactical situation will require the division to be split up into two or more task forces.

Support units include an engineer and signal regiment; an ASC regiment (including ordnance companies), an EME regiment, and a medical regiment. The medical regiment is smaller than might appear necessary for an 11,000-man formation, but that is only because it has 10 medical evacuation helicopters; only emergency operations and first-aid will be conducted within the division, more serious cases being evacuated to rear base hospitals. There is also an aviation support regiment with 6 Mi 6 Hooks and 20 medium helicopters (either Mi8s or Pumas) as well as 10 utility helicopters (SA.360, a ten-seat Alouette 3 successor). Relatively little helicopter maintenance will be performed by the regiment: most will be done by Army units, which will hold maintenance reserve aircraft, allowing almost 95% availability of aircraft within the division. Distribution of other helicopters within the division is: Divisional HQ-6 observation (SA. 315 Lama) and 2 utility (SA. 360); Divisional Artillery - 10 observation; attack helicopter regiment - 45 attack helicopters, 10 utility and observation helicopters.

The helicopter figures given are minimums. As noted earlier, additional helicopters have to be added to boost reconnaissance capability; around 4 more Mi-6s and 10 more utility helicopters could profitably be added to the aviation support regiment, plus probably another 20 of various types can be utilized by various headquarters, medical evacuation, and support units. 152 helicopters will be allocated to start with, and go to about 190.

Let us compare this formation with our present infantry division. The combat capability equation consists of three variables: reconnaissance, mobility, and firepower. With its organic armoured cavalry reconnaissance regiment and an attack helicopter regiment used for armed reconnaissance, this formation has perhaps 25 times the reconnaissance capability of

our existing infantry divisions. It is fully mobile: excluding the additional mobility provided by the medium and heavy lift helicopters (the 20 medium lift helicopters can simultaneously lift 2 rifle companies), mobility increases by a factor of 8. On US scales, a 9 infantry battalion division will use up 540 tons of ammunition a day in the infantry units. This smaller formation will use around 1100 plus tons a day, or twice as much. Artillery consumption will remain the same, as more rounds per gun will be supplied to make up for the fewer guns, but effectiveness will increase because the artillery is fully self-propelled. Additionally the division has a great deal of ATGM capability. There it will be fair to say firepower capability as a whole doubles.

Firepower increased by a factor of two, mobility by a factor of 8, reconnaissance capability increased by a factor of 25. This despite a manpower reduction of almost 40%. At this point the realist will say, "beautiful, beautiful, but how do you propose to pay for this magnificent formation?" This formation will cost about the same as a conventional armoured division. To fully mechanize the Southern and Western Commands will mean 3 of these divisions will have to be substituted for 4 infantry divisions. The manpower savings will pay for the equipment and increased operational costs. What would you as a ground commander rather have: 3 of these highly-mobile divisions capable of advancing 100 miles a day, or 4 conventional infantry divisions?

For a moment put yourself in Gen. G. Bewoor's place back in December, 1971. You have the prospect of capturing anywhere upto 100,000 square kilometers of Pakistani territory because Pakistan cannot muster sufficient forces in the sector. Instead, you are confined to a tenth that because you lack mobility, what is even worse, the enemy deploys less than half your force and holds you back with that because you lack the mobility to outflank him. Would you, in this circumstance, have taken two infantry divisions or two of the new divisions?

Now imagine yourself in Lt. Gen. N.C. Rawley's shoes. You have three infantry divisions plus a couple of armoured brigades, and the armoured division is in your sector. Fortunately Gen. Rawley was to defend, but say the plan had been to attack. With your total forces totalling almost 6 divisions, how far do you think you'd get with two Pakistani corps opposing you? A good guess would be 2 kilometres a day, with Indian corpses littering every 100 metres. That's if the Pakistanis let you advance, as they did in Shakergarh. If they fight seriously, and you are willing to lose two men

for every one of theirs, you might make 500 metres a day. But just think of what you could do with 4 or 5 of the new divisions.

Lastly now imagine yourself in Lt.-Gen. K.K. Singh's position. You have, say, 3 infantry divisions and a couple of armoured brigades under you. Opposing you in a narrow salient is a Pakistani force of 3 infantry and 1 tank division, with an independent tank brigade, many formations heavily overstrength, and with immensely complex fortifications all the way. If the Pakistanis oppose you, you'll deserve a medal if you make as much as 500 metres a day. But suppose you have 3 of the new divisions. Taking all the infantry in your divisions, you can put 30 rifle companies across the mine-fields within 6 hours. You have six attack helicopter regiments to support, and your divisional artillery can support at ranges up to 30 kilometres. Definitely it would have been a different story, particularly if the IAF had a plane optimised for close-air support.

Look at all the things that can be done with a fully mobile force. A brigade equivalent and a fighter squadron can screen each 200 miles of front, allowing the concentration of forces anywhere it is desired. Imagine putting six of the new divisions through a gap in the Pakistani line (remember your air reconnaissance capability), advancing 50 miles into Pakistan and then turning the enemy flank. Imagine sending a division as a red herring right across the River Indus, forcing wholesale pull backs because no linear trained army can fight with the enemy behind it—particularly when the high speed advance tends to exaggerate your real strength. The possibilities are endless. And all within our reach, merely by giving up 4 infantry divisions for 3 of the new divisions.

Assume that an armoured division and an infantry division have about the same number of men. Over a ten-year period, the armoured division may require around three times as much money for equipment, or additional expenditures of around Rs 80 crores. Extra operational costs come for the armoured fighting vehicles : artillery and support units tend to more or less cancel out. Extra fuel and ordnance are needed for the AFVs. At the very most this will add another Rs 10 crores over 10 years. Thus the armoured division will cost about Rs 90 crores more than the infantry division over a ten-year period.

At 1972-73 rates, the total cost of an infantry division is around Rs 30 crores a year: there are very roughly around 31 division equivalents in the army, 90% of them infantry, and 922 crore rupees is allocated for the army. Rs 30 crores a year is a crude figure, but a good working estimate for our rough estimate. Rs 40 crores a year for an armoured division allows, over

a ten-year period, Rs 80 crores for equipment additional, Rs 10 crores additional for POL and ordnance, and Rs 10 crores for other costs. Thus a three-tank division for four infantry divisions becomes possible.

Now consider our new division. It has 5000 fewer men, and assuming one man outside the division for every two inside it, a saving of 7500 men. At 1972-73 rates it costs the Indian Army, on a crude average, Rs 11,000 to maintain a single soldier, all costs included. Thus over a ten-year period the new division would show savings of almost Rs 85 crores.

On the expenditure side, in the new division, we have to equip one tank regiment less and one mechanized infantry battalion less, but have to provide funds for equipping two attack helicopter regiments and buying the other helicopters. One tank regiment trades off with one attack helicopter regiment (assuming 50% attrition and maintenance reserves, and an attack version of the Lama, which will cost, with 50% spares, about as much as a Vijayanta with 33% spares. Whereas around 67 Lamas will enable us to maintain 45, at least 80 Vijayantas will have to be procured for a regiment of 45). The second attack helicopter regiment will cost around Rs 20 crores with 10-year spares, about as much as a Vijayanta regiment as we have just noted. The additional helicopters will cost around Rs 35 crores (50% maintenance and attrition reserves, 50% per helicopter for spares). That leaves Rs 50 crores, more than enough to pay for the additional helicopter operating costs, and for additional new electronics.

Thus, very roughly the new divisions equal an armoured division in 10-year systems cost, thus 4 infantry divisions can be traded off for 3 of the new divisions. The reader is again cautioned these figures are only approximates, pencil studies to give some idea of the financial commitment involved.

Including time for studies, implementation of the entire project might take 8 years at a slow pace and 5 at an accelerated pace. Two armoured brigades would be converted first, each forming the nucleus of one new division. Simultaneously, an infantry division would be disbanded, its personnel being redeployed to fill out the two new divisions and begin training for the next two new divisions. The armoured brigade element of the new divisions would be continually available for combat should war break out before training of the new divisions is accomplished, so there will be no degradation of combat capability. The disbanded division will have to be replaced in the line from Central Command. Each new division should take no more than two years to become fully trained: the number of tank and mechanized infantry units increases only marginally over our current strength: SP Arti-

illery regiments will be converted from existing artillery. The only problem will be the training of helicopter crews and adaptation to the new tactics required by the division.

If we convert all forces in the Southern and Western Commands, (exclusive of the Western Command's mountain forces) and the plains corps of the Northern Command, as well as all our armoured brigades and the armoured division, we will be able to get about 10 of the new divisions in exchange for the very roughly 13 divisional equivalents now deployed. From Jammu to the Rann of Kutch we will then have a completely mechanized force capable of conducting high-speed offensive operations all along the front. There might occur situations in which more infantry is required. This can be supplied from the Central Command divisions.

Implementing this project will have another very desirable result. There will be a reduction of just about 100,000 men in the Army: there are fewer divisions under the new plan, and each is 40% smaller than existing divisions. This will enable the Army to be brought to around 725,000 men. A smaller, more compact army will make for higher personnel standards, more professionalism, and better training. It will go a long way towards reversing the lowering of standards caused by the post-1962 expansion, and by lowering officer requirements will aid in meeting the officer shortage. There is, in fact, a very good case for reducing the army still further, to about 650,000 men, by introducing smaller and more mobile mountain divisions.

A new armoured force for India is the only way we can decisively defeat Pakistan instead of continually being forced to accept virtual stalemate. Mobility is the key to modern warfare. This program will also go a long way towards making the Indian Army a first-class ground force.

APPENDIX 1

Rough T/O of the new division

Div H - 300

Tank Regt	=	3	×	750	=	2250
Mech Inf Bn	=	2	×	700	=	1400
Atk Hel Regt	=	2	×	350	=	700
Ad Cav Regt	=	1	×	600	=	600
(Manoeuvre unit subtotal					=	4950)

Div Arty HQ	=	250
8 Firing Batteries	=	1200

(Artillery Subtotal = 1450)

Engr Regt = 1000

Sig Regt = 500

Avn Supt Regt = 400

(Combat Support Subtotal = 1900)

EME Regt = 900

ASC Regt = 1200 (including Ord units)

Med Regt = 300

(Combat Service support subtotal = 2400)

Grand total = 11,000

Note: Please keep in mind when considering support units that the division is 40% smaller than the current armoured division; that much of helicopter maintenance is carried on outside the division; and that much of the medical strength is in the form of army base hospitals where casualties are evacuated straight from the division.

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JUNIOR LEADERS : INFANTRY

BRIGADIER H.S. SODHI

INTRODUCTION

The 1965 war generated a loud outcry against JCOs, particularly in the Infantry. The 1971 war too saw a similar view expressed, though relatively muted. Various people have advocated abolition of this rank, as redundant, useless and out of context in the changed circumstances where officers deal direct with the men.

There major alternatives have been suggested : first, platoon commanders (JCOs) should be replaced by officers; secondly the organisation of a platoon as such should be abolished and sections (six of them) should come directly under the company commander; and thirdly that NCOs should be platoon commanders. The fourth choice of making the existing JCO system work is never discussed as it is presumed to be unworkable.

The aim of this paper is to discuss the problem of junior leadership in the Infantry which revolves round the controversial JCOs. The JCO rank is peculiar to the Indian and Pak armies. Its introduction by the British is mainly attributed to the need for a link between the alien officers and men with attendant language problems and this is now cited as one main reason for elimination of this rank as the officers are no longer aliens. But there were other reasons too. This rank gave importance to Indians as one form of officers with the totally hollow but high sounding Mughal title of Subedar as one manifestation of this. Further, the officers were able to remain and seem aloof from routine matters and thereby in crease their awe.

The important fact, however, is that JCOs have always been basically platoon commanders in spite of their other nomenclature. The need for a platoon commander continues, irrespective of his rank.

BETTER PERFORMANCE

THE JCO system worked very well under the British. There are, even today, some battalions with a very high calibre of JCOs who still form the backbone of these units. Further, from the comparatively muted adverse reaction after, and more awards during, the 1971 fighting, it would appear that the performance of JCOs has improved since 1965.

Since Independence two major changes have occurred which could have affected the performance of JCOs. First, the complete Indianisation of officers overnight and secondly, the vast socio-economic changes in the country. These will be discussed subsequently and it will be fit to ponder over objectively whether officers are not the culprits, prosecutors and judges, all rolled into one, if this turns out to be true, the elimination of the JCO rank would only have a brief and temporary beneficial effect. It might be wrong to believe that the ethos of the JCO system no longer exists.

The leadership set-up in the Army is in two complete but nearly inviolately separate compartments, the officers from 2/Lieutenant to General and junior/Non-commissioned officers from a L/Nk to Subedar Major. The flow from the lower to officer class is very meagre and mainly confined to the rifleman or junior NCO level with even fewer Special List promotions.

Each segment of the leadership set-up has to cater for the normal requirements of any career: pay, promotions, job security, incentives and pension. These have an important effect on the conditions of service, particularly retiring ages. More specifically, the requirements of junior leaders in the Infantry are :—

- (a) Physical fitness commensurate with the activities involved; these are maximum at section and platoon levels.
- (b) Professional competence. This is built up with training and experience. Where experience has to be accepted as less important, training has to be more thorough as is the case with officers training at NDA/IMA vis-a-vis training of an OR/NCO/JCO.
- (c) Sense of responsibility. To some extent influenced by family environment but mostly by training and conditions in battalions (which is the official family).
- (d) Sense of pride in performance based on professional competence. This is entirely built up in a battalion and essential for good functioning. Job satisfaction, security and mental/moral and physical contentment also contribute to this.

A number of these requirements are contradictory. Physical fitness requires younger ages but for job security, family responsibilities and pension, older ages are inevitable. Incentives of promotion (hence pay) require more service and hence age. With age come more commitments, a tendency of playing safe but more maturity and experience.

SHORTCOMINGS

The major shortcomings ascribed to the JCOs are :—

- (a) They are physically unfit.
- (b) They lack a sense of responsibility.
- (c) They are untrustworthy.
- (d) In battle, they tend to play safe.
- (e) They are now redundant.
- (f) They are relatively less educated.

All these are, of course, true today but not, say, in 1947 to the mid-fifties while the World War II veterans lasted. The basic qualities required of junior leaders in World War II and now are the same, with certainly the added requirement of better education. The requirements of physical toughness, mental robustness, sense of responsibility and trustworthiness were certainly no less during the Burma campaign or operations in NWFP from what we demand today. Surely these are all dependent upon and co-related with the functioning of officers: and there is already a view that the officers of today are of not the earlier calibre which must have an effect all the way down.

Sense of responsibility, trustworthiness and education can all be developed and maintained in an unit. Physical fitness is no doubt effected by age but this too can be maintained under the right guidance and conditions. (This aspect is discussed more subsequently). All JCOs are educationally qualified according to the existing standards laid down. If education is now considered low, it is either a case of low standards being laid down by army Headquarters or low standard personnel are passed by officers. Irrespective of the education standards laid down, the younger elements are bound to be better educated as the opportunities increase in the country. Further, there is a limit to the required education; for instance, a large number of our senior officers are only Senior Cambridge qualified while the younger lot may be BA/MA: are these senior officers now out of date? It is not only the basic education that matters but thereafter keeping abreast with professional requirements; all aspects of functioning must come within the ambience of education as required in leaders.

JCOs are promoted from NCOs, and the NCO rank is accepted as good even today. It is then a moot point to consider why a good havildar

suddenly changes into a bad JCO almost immediately on promotion. The main causes are the changed handling by officers, age and seeming end of incentive/ambition. Before discussing these, however, it will be pertinent to discuss the implications of the alternatives suggested by others to the JCO system.

The two major alternatives offered are either to replace JCOs with officers or with NCOs.

Officer platoon commanders would certainly prove more efficient. They are better educated and have undergone longer formal training. Their age makes for maximum physical fitness. The age and lack of direct family encumbrances make them more venturesome, daring and aggressive, needed qualities at this level. As this would be the bottom of the ladder, such officers would have the incentive of higher rank up to COAS.

MAIN EFFECT

The main effect of this would be on the NCOs. Promotion prospects would end at a Havildar, leading to lack of incentive at this rank (like a JCO today). With this would go the pay and pension prospects of the higher (JCO) rank. This could be overcome with a general increase, to JCO level, of pay and pension but will our country's finances permit this in view of the increase in officers establishment? Failing this, NCOs must serve longer with the attendant problems of physical fitness and tendency to play safe due to lack of further incentives and more family encumbrances. It could be argued that the NCO should be retired early; if this is done can he be assured of an adequate pension for the rest of his life or assured of a job in civil life? This is most doubtful.

It will thus be seen that the standard of platoon leadership, with officers as platoon commanders can only be at the expense of section leadership. The conditions for NCOs would then be the same as for JCOs today. From the overall point of view, therefore, this is of little help.

It has also been suggested that NCOs be made platoon commanders. By this, of course, it is hoped that now good NCOs (platoon havildars, section commanders) will continue as good platoon commanders. The rationale behind such thinking is obscure and likely to prove fallacious.

The NCO today is good because he is not the platoon commander. His younger age makes it easier for him to remain fitter, he has less commitments and has the very big incentive of promotion to JCO rank; all these make for a good NCO. And above all, he is not directly responsible to

officers and hence his mistakes/shortcomings are conveniently blamed on his JCO.

If he is now to become an NCO platoon commander, the incentive of promotion is removed. To qualify for pension equivalent to a JCO's he will have to serve longer with the same problem of age and physical fitness; the present condition of JCOs would only be repeated. There is little possibility of sending NCOs on full pension at an early age due to financial implications.

Such a change could have been accepted in 1947-48 as a part of the general upheaval that occurred. Having carried the JCO system for 25 years, it is now inadvisable to effect such a drastic change and nor would this be possible without some repercussion, no matter how gradual the change. The JCO rank has won a place in not only the Army but our society.

The basic considerations to bear in mind are; first, that whatever the alternative adopted, it must not lower the entitlements and conditions/incentives for OR/NCO. Secondly, the financial implications must be kept in view. Thirdly, the change must not be for the sake of change but must lead to positive benefits to the Army over a long period. Fourthly, no matter what the nomenclature, a platoon commander remains as such; mere change of the rank of a platoon commander from JCO to NCO will not lead automatically to greater efficiency. Fifthly, such a drastic change is only possible in a state of flux which does not exist in our country or Army.

The need today is not to eliminate the JCO system but make it work as before. In passing it is worth mentioning that British officers knew much more about their men, families, problems and villages, in spite of the JCO link in between, than officers do today.

PRESENT SYSTEM

The present system of the lower leadership segment from OR to JCO caters for promotion, incentive, security, pay and pension and respect. For some reasons it falters at the JCO level. These reasons can basically be grouped as age, handling by officers and incentives; the last two really being complementary.

Higher age tends to lead to two effects: problems of remaining fit and tendency of playing safe. Physical fitness requires continuity in exercise; given this, there should be no difficulty in remaining perfectly fit at least till

40 years of age and a large number of JCOs do so in good battalions; senior JCOs, however, serve till about 48 years of age.

Lack of adequate physical fitness among JCOs can be ascribed mainly to break in continuity of exercise. On promotion to JCO, there is tendency to become "non-playing captains". JCOs do not participate in activities like PT, games, obstacle course and BPETs but only supervise, and this is ignored by officers. The result can soon be seen in the embryo paunches that fast become permanent. It is, therefore, incumbent on officers to ensure that JCOs and officers themselves fully participate in all activities and in fact always lead.

The second factor in discontinuity of exercise is the large number of JCOs on ERE from battalions (average 19). While out of the battalion they become unfit physically, mentally and no longer fit for battalion life. There is a need to change the ERE system, particularly for the NCC (being discussed subsequently).

The tendency to play safe is inevitable due to age, consequent maturity and added family responsibilities. This is further heightened by the feeling that the end of the line is in sight so the remaining period should be passed safely. This tendency will arise in NCOs also if they have nothing more to look forward to and are to serve longer.

This can be combated by proper motivation/brain-washing to inculcate pride in performance and professional competence. Added family benefits in case of war casualties go a long way in making a man more venturesome and this has already started.

There is, however, a need for bringing down the age of JCOs in battalions.

OFFICERS' CONDUCT

There is a strange ambivalence in officers feeling and behaviour towards JCOs. On the one hand JCOs are given all the outward respect and importance and on the other JCOs are not trusted. Both are wrong and lead to conclusions like "Naib Subedar Adjutant and Naib Subedar Quartermaster can be dispensed without much difficulty as Adjutant and Quartermaster give direct orders to BHM and BQMH (USI Apr-Jun 72 page 158)".

This is a very revealing statement and quite the core of problem of management of JCOs by officers. The rationale and need for the appointments/duties is overlooked completely; for instance, the duties of Naib

Subedar Quartermaster and BQMH are not overlapping but quite distinct and if the JCO is eliminated he has to be replaced by another NCO—so what is the difference ?

As mentioned earlier, the important thing is not the JCO rank but the appointment and its duties. Officers must ensure that duties by all appointment, irrespective of rank, are carried out fully. In the case of JCOs, however, officers fail to do this. A feeling seems to arise among officers as if a JCO is not part of or responsible for his sub-unit in all respects. Officers deal direct with NCOs and JCOs conveniently stand aside with full respect and prerogatives but no responsibility; hence a JCO has no qualms when anything goes wrong in his sub-unit.

It is often said that JCOs are bypassed as they are going to let us down anyway and further that there is nothing much that can be done to a JCO within a battalion. This may well be true as in practice today but within the existing rules, the situation can be and before 1947 was quite different; after all, our basic rules and regulations are the same as pre-1947 and only the enforcers (officers) have changed.

A MISCONCEPTION

It has become an established misconception among JCOs that promotions from Naib Subedar upwards are automatic by seniority. Having become a Naib Subedar, therefore, they relax, as, no incentive is left. This feeling has been generated by officers following this easy way out to avoid unpleasantness or due to "bichara (poor chap)" charity. This misconception needs to be removed in practice. Naib Subedars must be made to strive for their next rank and those found unfit must be bypassed/removed. We all have our limits and must reach our level of incompetence at some rank and why not at Naib Subedar. A unit cadre should be introduced for promotion to Sabedar.

Further, a Commanding Officer can withhold increments in pay by merely writing to Records but how many use this lever; in fact how many know of it.

Given even the most objective selections some wrong types will get promoted. Or some JCOs are not pulling their weight. Such JCOs should be weeded out but in practice they are merely posted out on ERE so that the problem is solved for that Commanding Officer. But not for the batalion or the JCO system. The JCO sent on ERE in fact is much happier there

and the good JCOs being kept in the battalion are the ones suffering. Officers must have guts and foresight to deal with such cases themselves.

A sense of responsibility is only built up by a combination of motivation/brain-washing, pride, clear-cut orders, judicious supervision leading to praise/reward or reprimand/punishment; this process is a long one and a sense of responsibility is not built up in a day but can certainly be lost very fast. Our NCOs are accepted as good, presumably with adequate sense of responsibility but on promotion to JCO the same man is said to have a low sense of responsibility. It is a moot point to consider where the cause lies.

The process must start with clear orders of what is to be achieved and in how much time. There should be no interference in the actual execution under the guise of supervision or advice; after all the only initiative possible in the Army is in the execution. Praise/reward or reprimand/punishment must be the inevitable result on seeing the (in) completed work.

Genuine mistakes must be accepted as part of training as long as the same mistake is not repeated. The fault here lies mainly with seni or officers who tend to give undue importance to minor mistakes which lead Commanding Officers and other officers supervising everything personally to avoid mistakes. This is all very well in peace-time that mistakes are avoided/hidden but there is no such way during battle where mistakes can be more costly. A sense of responsibility cannot be built up or brought forward during battle only; this must be built up over a period of time during peace.

Even the smallest task is given to officers. A few years ago, I went as an observer to a big exercise. Two days before the termination, thoughts obviously turned to the summing-up and I happened to overhear a telephone talk between a very very senior staff officer and a Lt. Col which went something like this "We need PA equipment for the summing-up. Must reach here by tomorrow. Send it in a reliable vehicle with a responsible person. No, make it two sets of PA equipment in two reliable vehicles under an officer; he should be a senior officer". And there are host of similar incidents daily.

There is an urgent need to throw more responsibility at JCOs to make them responsible. This can only be done by officers with guts and broad shoulders.

COMPETENCE

Pride is an essential component in a good soldier (or JCO). This has to be based on professional competence and performance which leads to self confidence. This must not be confused with arrogance which is normally based on past (others) performance and glory. Very little, is done to continually train and develop sub-unit commanders for the next rank. Unit promotion cadres have become routine consisting of the same thing at all ranks with no particular bias for the rank. Sub unit commanders carry on as best as they can with on-the-job training with little supervision or guidance. There is the need to raise the general standard of training of sub-unit commanders.

The interior economy and administration of a sub-unit used to be the responsibility and pride of a JCO. No matter how senior the visiting officers, only JCOs were present in the lines and got the praise/blame. This has now changed and officers await the visitors in the lines. The JCO is out in the cold with nothing to do; no wonder he has no qualms in reporting to his company commander "Sahib, do admi bhag गया, teen rifle gum hogaya, baki sab thik hai".

It is apparent that the shortcomings of JCOs, less the age problem, are basically due to officers' shortcomings. Officers are to blame but they like to act as prosecutors and judges.

Leadership, particularly in the Infantry with its inherent dangers/hardships, involves an invisible and silent struggle between leaders and those led at all levels. It is the establishment of perfect rapport and confidence that makes subordinates obey orders that are dangerous. It is right that JCOs can be a link between the officers and men but at present are more or less in a state of suspended animation. Having risen from the ranks they obviously tend to favour the men and officers play into their hands by dealing direct with the NCOs. JCOs must be used as a channel to control the men and take the responsibility for passing on easy or tough orders. Then only is the channel of command complete and JCOs on the side of officers in achieving efficiency.

MODIFICATIONS

The only problem, outside the competence of officers within a battalion, is the one of age of senior JCOs. The following modifications to the existing system/authorisations are suggested to overcome this problem without additional financial implications:—

- (a) Authorisation of JCOs in a battalion should be for all Naib Subedars except for five Subedars (Company 2JC) and one Subedar Majors.
- (b) The increase in Naib Subedar and decrease in Subedars should be compensated by suitable adjustments in the authorisations of these ranks on ERE, particularly NCC.
- (c) JCOs once posted to the NCC should not revert to battalions but stay with the NCC till retirement irrespective of the length of stay. A definite and permanent break between unit and NCC service is essential for efficiency in the Army.
- (d) Subedar-Majors in units should be chosen from among the five subedars in the unit.

This system will lower the age group of platoon commanders (JCOs) keep out the ones contaminated by the NCC and yet provide incentives within a battalion.

One of the major attributes of a good leader in peace time is his ability to teach, improve and guide subordinates. Good units are made in peacetime and reap the benefit in war. Officers, being the highest leaders in a battalion, are therefore, the most important and a Commanding Officer's responsibilities today are more onerous and important than ever before.

It is often said that the officer material coming forward today is not as good as before. This may well be true and yet be a very healthy sign for the country; no truly democratic country can boast of attracting the best talent to its armed forces. Service in the armed forces today is no longer only an honourable professions for the propertied class with its disdain for commerce (there are hardly any of this type left anyway), but more of a form of livelihood. And as a livelihood it stands no comparison with business enterprise where the best talent now goes, for better remuneration, better living conditions and above all, for more responsibility, return and reward without undue considerations of age or service. It is fairly common to hear of a young (between 28-35 years of age) independent manager of a big concern, but say a brigadier at this age, no matter how brilliant the officer ?

The Army is getting the best type of officer material that it is likely to get. The changed socio-economic conditions and consequent effect on mores, in the past 25 years, have so far affected the officer class mainly who in turn affect those below them; given time, these changes will bring about

consequences among the men also. The Army must, therefore, learn to live with material available.

CHANGED OUTLOOK

The changed outlook from merely an honourable profession to a livelihood is more materialistic and has its biggest effect on basic values like self-respect and pride. Self-respect in the accepted sense, is gradually vanishing and it's often nostalgically remarked that earlier officers hated to be ticked off or found wanting and hence worked harder without supervision, but today the officers, particularly the younger lot, would much rather dodge.

Pride is no longer based on glory, importance of work or hardship but on materialistic conditions of service, pay, age of retirement, ease of life and the like, the important aspect being how easy one can live. This is why today volunteers for the services are the most. In pre-Independence days the infantry and cavalry drew their officers by their pre-eminence in battle and aesthetic appeal to superiority in the Army, including the hardships; services and the staff enticed officers by extra corps/staff pay. Seeing the different outlook now, the incentives should be changed around and arms given extra pay. There are increasing cases of young officers posted to the Infantry, wanting to transfer to the services. A major inducement for cadets to opt for services is the later age of retirement. This age should be made the same for all. Such an age really starts applying when an officers has reached his limit of promotions and at such service his continuance in the unit is not likely in any case; such officers could be absorbed on ERE appointments currently going to re-employed officers.

All this is a natural trend and is mostly dependent upon the conditions and education outside the Army where basic values are formed; after all, the Army consists of persons raised in the environment of the country as a whole. The Army can only hope to further mould the material that comes forward.

FIRST STEP

The first step has to be at the NDA/IMA. The importance of basic values of self-respect and pride, not entirely based on materialistic considerations, need to be stressed. It should be emphasised that the Army is not just a livelihood (for which there are better opportunities outside) but a way of life which is simultaneously dangerous, hard, satisfying and of human comradeship rarely found in organisations other than the armed forces; in all this, material values though important are not over riding.

Further, at the NDA/IMA, a correct evaluation of each cadet's suitability for an arm/service must be made. The daring, venturesome and aggressive types must be encouraged to find their slot in suitably tough and demanding arms. An individual's choice certainly needs to be taken into account but this cannot be over-riding nor will it prove immutable if the individual cadet is tackled properly, for a change.

The next step is in the battalion when a young officer first reports. Such officers belong to a wide-awake, questioning, and iconoclastic generation who are not happy to be only seen and not heard. He has his own opinions and wants to know the rationale for everything. A lot of young officers are disillusioned when they find seniors who want to treat them as inanimate objects which must merely obey orders blindly.

LIMITED AIM

To this must be added the problem of most NDA products (I fully realise the wrath I am inviting from a large number of officers). From a young age, an NDA Cadet has a very limited aim of getting a commission which sees him through the NDA and IMA; by the prolonged exposure to military life, he, as a sideline, picks up all the arts of dodging which a veteran would envy. On being commissioned, he is so relieved and satisfied that he only looks forward to a life of relaxation and pleasure. It takes a few precious years and hard knocks for him to realise that his work has just begun. (There is a moral and a lesson in this which I dare not even hint at.) The third year spent at the NDA by Army Cadets doing military subjects should be at the IMA, where the atmosphere is more mature.

The young officer is fairly satisfied with learning when he joins the battalion. It is a fact today that the younger lot of officers are not keen on self-study. They must be guided and forced to do so under central arrangements at battalion or formation level. The knowledge of officers tends to be superficial and left to themselves they are the perfect dilettantes. Officers must be given a firm grounding in all aspects of a battalion in theory and practice. Young officers must be made to perform the duties of various appointments like section/platoon commander, and learn personal and equipment documentation by actual performance of such duties including the clerical work involved. This should be done in the first year of service. Further, the Infantry officers' knowledge of Armour, Artillery and Engineers is weak. This can best be improved by at least a 6-month attachment of officers of Infantry, Armour and Artillery, to the other two arms, during their second and third year of service.

An increasing number of service personnel are getting commissions and a fairly large portion of these come to the Infantry. Their very background and ambitions are a handicap here. They are generally of a higher age group, have narrower outlooks and achieving a commission satisfies their ambitions; prone to playing safe, they act as a damper on others. The number of such officers in a battalion should be kept at not more than one at a time.

All this is not being stated in a pessimistic vein but only to highlight the changed conditions that obtain today. These, inevitably, demand a changed handling by the Commanding Officer who has become more important than ever before and especially during this transitional phase from Westernised outlook officers to Indianised outlook officers. The Commanding Officer must appreciate the change in basic values and general iconoclasm prevalent in the country, militating against mere blind obedience of orders, while selecting the methods of achieving a state of professional competence, mutual confidence, esprit de-corps and pride, in all strata of his unit. The methods generally remain the same but the emphasis on the various aspects must vary.

CONCLUSION

This paper has taken a general look at the junior leaders in the Infantry. The systems in vogue have stood the test of time and are generally in consonance with the existing requirements.

The JCO rank has been much maligned and vilified which has vitiated the battalion scene to some extent. JCOs are basically platoon commanders and this appointment cannot be abolished, only the rank/nomenclature can be changed. The shortcomings among JCOs are the result of handling by officers who, in fact, are the culprits and now prosecutors/judges all rolled into one—hardly the most objective. The JCO rank must stay and must be made to work efficiently; for this officers need to be more objective and have the courage to enforce measures for the longterm benefits of units.

Conditions in the past 25 years have changed a lot, leading to changed outlooks. These must be taken cognizance of; further the young officers today is more Indianised in his habits and outlooks.

The burden for recognising these changes and adapting to them lies on senior officers (Lt Col and above). Talking to the men about past officers can be very revealing. The most remembered are not the types who let the men have an easy time, but those who gave them a pride of positive achievement like a tough exercise or march.

"MR. VICE, THE PRESIDENT"

BRIGADIER NB GRANT, AVSM

"GENTLEMEN, the President"—all officers at the table are then supposed to stand, and to the tune of the national anthem, drink to the health of the President in Aqua Pura. Depending on the occasion and the financial position of the mess, all other toasts which may follow, can be drunk either in French vintage 1842, or in Golkonda liquid of 1972. Coffee is then served, cigarettes lit, after which the officers retire into the ante-room.

The British left India 25 years ago, and we have only recently celebrated the Silver Jubilee of our Independence, and yet, all the customs and traditions of our erstwhile rulers still continue in our fighting Services, although in most cases they have long past lost their significance. It has now taken such a strong hold on us, that even after retirement, some officers insist in their own homes, that in keeping with the mess tradition, the teapot is passed round only in an anti-clockwise direction.

The time has come when we must seriously examine whether some of the customs and traditions which are observed by the Services, but which nevertheless are completely foreign to our Indian way of life, should be allowed to continue. It is not for one moment being advocated that the Services should do away with mess trappings and certain customs, which although on the face of it may appear absurd, are nevertheless necessary. However, it must be appreciated that all Service customs must be related to national traditions, and not be linked with concepts which have no meaning whatsoever under the social conditions prevailing today, in the country. A few illustrations will possibly make the reader understand this problem in its correct perspective.

THE LOYAL TOAST

Perhaps a brief note on the origin of the custom of drinking healths would not be out of place here. This custom is probably derived from the ancient religious right of drinking to the gods and the dead. The English term 'toast', as applied to drinking healths, had reference at first to this custom of drinking to the ladies, and its origin is somewhat curious. In Stuart times, it was the custom to put a piece of toast in the wine cup before drinking,

from a belief that it gave the liquor a better flavour. There is a belief that a gay fellow, half fuddled, who offered to jump into the cup, swore that though he liked not the liquor, he would have the 'toast'. He was opposed in this resolution, yet this whim gave foundation to the honour which is done to the 'lady', who has ever since been called a 'toast'.

It should be noted, that not all British regiments toast to Her Majesty, and that they all do not do so standing. For example, in a particular Scottish regiment, the CO was of such a short stature, that he'drank the toast with one foot on the chair and the other on the table. This custom still survives in that regiment. However, that some of our Indian gunner regiments today also observe the same custom appears somewhat odd. The only association which one can think of in their case could be with the regiment's mascot dog and the lamppost outside the officers' mess.

In the Royal Navy, regiments which were originally Marines, the toast is always drunk seated. Our terribly British Indian Navy, observes the same custom on the ground that in the old ships it was not always possible to stand upright owing to the beams. The real reason however of this custom being followed in the British Service is that officers who remained loyal to the dethroned James II used to take their pistols to mess and sat on them to dinner. They remained seated during the toast and thus prevented their pistols from being taken.

At a Signal regiment's Corps Day dinner, the Corps Commander who was their chief guest asked for a glass of beer. He was told that there was a tradition in their mess that beer is only taken before lunch and cannot be served before dinner and, as a rule, only whisky or gin can be taken before dinner, and liquor and brandy after that. So as not to embarrass the regimental tradition, he asked for a glass of water in lieu. One could see the officers of the mess quite perturbed at this, specially so when the Corps Commander was their chief guest. They quickly went into a small conference and offered a compromise solution namely, that if he was able to sustain himself during the dinner without a drink, they were willing to give him a glass of beer after the dinner was over. A couple of years later, the same officer, now an Army Commander, again happened to be the chief guest at the same regiment. However this time, his request for beer was readily granted even before dinner. When he asked them whether the drinking tradition of the regiment had since changed, he was told that as the Duke of Edinburgh only drinks beer, the British regiments were compelled to scrap their old tradition on this issue, and as such the Indian Signal Regiment had also followed suit.

MUSICAL CUSTOMS

Strange though it may seem, from the rough and often frightful business of soldiering, numerous musical customs have emerged in our Services, to remind us of varied military episodes and associations of the British Army. One of the gallant incidents was the remarkable courage displayed by Piper George Findlater of the Gordon Highlanders during the Tirah Campaign in 1897. The fighting took place against the Afridis on the North-West Frontier of India, and early in the attack on the wellnigh impregnable heights at Dargai, on 20 Oct, Findlater was wounded by rifle fire. Efforts were made to remove him to a place of safety where his wounds could receive attention, but he refused all offers until the heights had been won. In recognition of his devotion to duty he was awarded the Victoria Cross. One of the tunes played on that memorable occasion was the now famous "Cock o' the North", which has since been adopted by the Gordon Highlanders as their regimental March. At a dinner night of one of our Indian regiments, after the toast was drunk, and while coffee was being served, a piper came in and played the "Cock o' the North". On enquiry the Adjutant of the battalion stated that this is a very old tradition with the Regiment; however not a single officer in that unit, from the CO downwards, could really throw any more light in the matter.

In another infantry regiment mess, after the toast was drunk, the regimental band struck up a popular tune "Kiss me, Lady". When asked the reason for this, as usual the CO put it down to "tradition". A little research on the subject has, however, revealed that with the Royal Berkshire Regiment there is a legend that this ritual was introduced several years ago by a somewhat amorous commanding officer, who had been "smitten" by a lady with whom he had danced to that tune. As far as the Indian regiment is concerned, possibly "Meri Jan, Meri Jan" would have been a more appropriate tune.

Under the caption "Dress" the book on Military Customs reads as follows:--

"Find out the reason for any idiosyncrasy in dress. Do your best to ensure that your uniform is of the correct regimental pattern. Most regiments have individual differences in dress—some wear buttons on their cuffs, others coloured patches behind their badges".

For instance, wearing of tiger or leopard's skin by the bass and tenor of some of our regiments is a relic of the early eighteenth century when a

custom was introduced into the British Army of employing Negroes to play the drums, cymbals and similar instruments. These "sable musicians" were dressed in a highly picturesque manner which was quite fantastic, and were festooned with an abundance of tinsel and other items of an ornamental kind like tiger and leopard's skins. Our Indian regiments have retained this dress, possibly due to their association with the famous Bengal tiger.

FLASH CORD

Down the centre of the white shoulder belts of some of our Guards Regiments is a crimson flash cord, sometimes referred to as a flash string, the word "flash" being derived from the preliminary flash before the explosion of the charge. In the middle of the seventeenth century, the carbine was the weapon of the British cavalry. The cartouche box was carried upon the crossbelt. Although officers of the King's bodyguards did not carry carbines, they carried flash cords on to which was secured the key of their Royal coach. I do not think our Guards carry on them the key to the President's coach! However, the custom continues.

The above examples have been restricted to the Army, as inclusion of instances from the other two Services will make this article too long. However one glaring example in connection with the Air Force is worth mentioning. In that Service, for some unknown reason, the British ranks of 'sergeants' and 'corporals' etc, still continue to persist to such a degree, that if a 3-striper is called a "Havildar", he will be mortally insulted, and liable to sue the person concerned for defamation.

NATIONAL HERITAGE

The fundamental question to be asked is, whether rigid traditions and customs of our Service messes are necessary for the fighting performance of our Army. The specific question to be answered is, whether the mess life as prevalent in the Service today, is an adjunct to the fighting efficiency of our officers.

To the first question regarding customs, it will be apparent, that these are all based on British traditions. The British Army built its traditions on the national heritage of the British nation. The British Parliament and the English society is based on traditions which have been jealously guarded for generations. The traditions of the British Army, therefore, are only reflections of its national traditions, and thus admirably suit and serve the purposes for which they were introduced in the British Army. As a complete contrast, the American Army has no traditions so to say, and yet, even with-

out them, in both World Wars, it has proved itself to be a very efficient fighting machine.

With regard to the second question, namely, the necessity of having Army messes, whereas in the British Army the officers' mess is one around which all traditions and customs of the Service are based, the American Army on the other hand does not have an officers' mess, except under field conditions, and is not any the worse off for it. In peace stations, the Americans have a system of chummeries where service families live and dine together. This has in no way dented either the discipline of the American officer or has made him effeminate.

In India, the British had a reason for having officers' messes in the manner in which they are established today. The British officer who came to India was normally a bachelor, and in his battalion except for the CO, and possibly the adjutant, all other officers were unmarried. As such, the mess naturally formed the centre around which the social life of the Army revolved. On the other hand, in our Army today, where almost all officers of the battalion are married, it is a common sight to see only one or two dining members in most messes. The mess, therefore, is no longer the pivot of social life in the station as it once used to be. If anything, today it is a big drain on the officers' purse, and does not serve the purpose for which it was originally intended. Besides, unlike the British, we as a nation are very much family minded, and like to do things together as a family, as such, the sacrosanct notion of the mess being a male preserve has no meaning in Indian society. In any case, the mess does not reflect the kind of life we lead in our homes, as such it becomes an artificial way of living for us.

What is then the answer? To begin with, we must ask ourselves whether under today's conditions, both financial and social, is the present mess life, or even messes as such, really necessary for the efficient performance of our Army specially in peace stations. Secondly, we must address ourselves to the overall question, whether rigid traditions, and more so those which are completely foreign to us, are a necessary adjunct to the fighting efficiency of our officers and men. If the answer is, that we as a nation consider ourselves tradition minded, and possibly we may be, then we must reorient our ideas, and build into the Army those traditions which reflect the social and other values of the nation. In the present system, we are blindly following someone else's traditions and customs, which are so foreign to our upbringing and national standards that on the face of it, they appear farcical and hypocritical.

It is an accepted fact, that gallantry, chivalry and comradeship in arms have enabled our Army to establish a reputation of its own. In a succession of wars through the past centuries, countless men of ours have died, their names forgotten, but their deeds live for ever, providing the fighting Services with "tradition". Much of this has been achieved by the maintenance of traditional chivalry, gallantry and justice.

However the value of retaining our military customs can only be justified, if these customs have an association with our Indian heritage to a degree which makes us become emotional regarding them. Today unfortunately this is not so, and we slavishly follow British customs in our Services without understanding their meaning and what is worse still, without in any way being connected with them. The result is that whenever a young officer seeks guidance on our customs from those in authority over him, he receives the laconic reply, that this is "done" or "not done", because it is the "Custom of the Service".

THE INDIAN NAVY AND ITS PROBLEMS

WING COMMANDER MOHAN SINGH

AFTER partition of India in 1947, the ships of the Royal Indian Navy were shared between Pakistan and India in the ratio of 1 : 3. Most of these crafts were beyond their optimum performance level and were due for de-commissioning. It was too small and lopsided a navy by any standard and more so for a country of India's size.

Besides inadequacy of ships, the navy faced acute shortage in experienced officers and sailors in senior ranks. The latter, predominantly being Punjabi Muslims, had opted for Pakistan, thus causing a serious vacuum. Shortage of officers was made up by borrowing experienced officers from the British Royal Navy, whereas sailors in junior ranks were given extensive training over a period of time to make up the deficiency.

Having no aggressive designs, India's political architects concentrated more on national reconstruction than on defence. Admiral R.D. Katari, the ex-Chief of Naval Staff, recalls :

"...How often and how vehemently the late Prime Minister Nehru opposed the allocation of even minimum funds for what the Military Advisers considered minimum defence needs. He once told them that, rather than divert precious funds from national reconstruction, he would prefer to have them fight aggression with lathis (staves)".

India with its 95 per cent of foreign trade by sea, vast coasts extending over 5600 K.M.; numerous scattered islands to guard and inimical Pakistan to encounter, has to depend more on a conventional type of navy. It would be futile for India, at this stage to go in for highly sophisticated under-surface nuclear style navy, which it can neither afford nor maintain.

With varied and heavy commitments, India could not afford to ignore her navy, but unfortunately after independence the importance of the role of navy in peace and war was not adequately appreciated by the government. The Navy had a raw deal until recently.

In 1947, when Pakistan marauders attacked Kashmir, the Indian navy had no defensive part to play. In 1962, during the Chinese aggression, Indian Navy was again nowhere in the picture. In 1965, when Pakistan attacked India, the navy did get a chance, but Prime Minister Shri Lal Bahadur Shastri rigidly restricted its role, as revealed by the following excerpt from a communique addressed to the Chief of the Naval Staff.

"....Navy should not go into offensive action, but should confine itself to safeguarding India's coastline and protecting the country's maritime trade....."

Having thus been denied an effective role for almost a quarter of a century, the Indian Navy's stock slumped. It had to suffer endless taunts. At one stage a member suggested in the Lok Sabha the disbandment of the navy and use of the money thus saved on the other two services.

From 1947 to 1970, the navy concentrated on comprehensive training programmes. From within its limited budget, it acquired some useful, though reconditioned, ships like cruisers. By the time the 1971 war was thrust on India, the navy had some lately acquired Russian-made small vessels and some other ships.

The 1971 war came as a blessing in disguise for the Indian Navy. It got a welcome chance to show its worth and mettle overnight. It switched over from defensive to offensive tactics, and became a force to reckon with. The Indian Navy for the first time had full freedom of action. With the curtain going up on 3rd December, 1971, the Navy let go its Fleet on well-planned errands. The three-fold task assigned to it was :

- (a) To seek and destroy enemy warships ;
- (b) The maritime link between the two wings of the enemy to be sliced, ensuring that no supplies reach the Pakistani war-machine in East Pakistan ; and
- (c) To keep Indian sea-routes open.

The Indian Navy did a commendable job.

The exploits of the Navy in the 14-day war are too well known to warrant repetition, except for the Pakistani ruse that was effectively foiled by it. The Pakistan Navy had camouflaged 14 of its ships with the names and flags of foreign countries to pass as neutral ships. They were kept in

readiness near Khulna and other ports to evacuate Pakistani troops from the east. This, however, did not escape the Indian navy's vigilant eye. Pilots of the Vikrant-based aircraft, though not properly equipped for the job, with their ingenuity and use of unorthodox methods, destroyed each one of those ships. That is how Pakistan's escape bid miserably flopped and over 90,000 surrendered to become prisoners of war.

The Indian Navy, with its outmoded ships, though to some extent supplemented with lately acquired Petya-type patrol and OSA missile boats, not only pinned the enemy down, but took a heavy toll. Surprisingly, the Indian Navy got away so lightly. So perfect and effective was the Indian Navy's domination and sway of the seas, that during the 14 days, 200 odd ships were brought to Indian ports safely without a single mishap and not a single ship was allowed to reach any of the Pakistani ports.

The important role that a navy plays in peace and war is now better realised. The necessity of strengthening and modernising the navy is appreciated by all concerned. The Defence Minister in a written answer on 18th August, 1972 stated in the Lok Sabha: "...the Government is fully conscious of the need for replacing old and ageing ships of the Indian Navy." He admitted that several of the naval ships were no more at their optimum capacity due to long use.

It is a known fact that the defence budget of India at 3.5 per cent of the GNP is very low. Of this, the Army, Air Force and Navy share 66, 24 and 10 per cent respectively. In view of the recent realisation the nation will not grudge the Armed Forces the required funds, with an increased share for the Navy.

In 1948, a plan for the development of the Indian Navy based on a two-ocean (Bay of Bengal and Arabian Sea) concept, was prepared by a senior officer of the British Royal Navy, asking for a number of big and other ships. The plan could not be implemented for want of funds, most of which of necessity had to be allocated to the Army and the Air Force. The Indian Navy, yet, has no Fleet in the real sense of the word. A Fleet composition is capable of keeping the sea routes open for its merchants ships far beyond 2000 miles, and cope with defence commitments far and wide. With the problem of peace in the Indian Ocean area also becoming a matter of concern for India, the two-ocean concept yields to a three-ocean concept.

India, by its very geographical location, has to assume wider responsibilities. The navy has to gear up accordingly. The role of the Navy, thus emerges as under :—

- (a) to effectively guard its vast coasts and scattered islands,
- (b) to keep its sea-lanes open,
- (c) to be able to go to the aid of small developing countries, and
- (d) to keep an eye on the Big Power navies prowling in the adjacent high seas.

The Hindustan Times, in its issue dated 21st February, 1972, envisaged the Indian Navy's role thus :—

“..India's role in Bangla Desh and its earlier prompt assistance to Ceylon during the island's emergency last year (1971), indicate the beginning of a regional role, which has helped to promote peace and stability in South East Asia....”

To fulfil this role, what kind of a Navy should India have ? some interesting? if controversial, Suggestions have been made in the books written after the 1971 war.

The author of one of these, on noticing non-availability of LSTs for landing the troops ashore at Cox' Bazar, has suggested acquisition of Commando Carriers. This is, however, beyond India's reach. The cost of one Commando Carrier equals several LSTs (some put it equal to 20 to 25 LSTs). On account of the prohibitive cost, acquisition of a number of LSTs should suffice for the time being.

Another author suggests: (a) Small vessels like Petya type patrol boats, OSA missile boats, and other small nuclear vessels be acquired, since the days of big ships are over and (b) Aircraft-carriers are not likely to play any major role in future. Vikrant be converted into a helicopter carrier assault ship.

How these suggestions fit in with the requirements of India, need to be examined.

Big/Small Ships : The exploits of Petya-type patrol and OSA missile boats in the 1971 war, with their “quick hit-and-return” capability beyond normal expectations, have impressed everyone. With their speed of 30 knots and good strike power, these are a serious threat to any big ship, but are basically more suited for the near-coastal defence. No doubt, these

small vessels play an important role, but a limited one, on account of their limited range, endurance and the purpose these are manufactured for. These are complementary to the big ships than a substitute or replacement. The Indian Navy, besides guarding the vast coasts and keeping the sea-routes open, has to keep an eye on high seas for which bigger ships with endurance are the mainstay. Let one, therefore, not be lured into the smugness of "quick hit-and-return" concept.

The above assertion is made with full knowledge of the fact that advance in science and technology is tempting most of the nations to go in for under-surface nuclear components in a big way. Much literature has appeared in its favour, as if the concept of "war at sea" has changed. It has to be realised that going in for under-surface small ships at the cost of big surface ships, is more a change of methods than change of concept. Let it not be forgotten that surface and under-surface nuclear vessels, weapons and warheads are more of a deterrent. No nation dare use these for fear of reprisals and dire consequences. Wars at sea, as already witnessed in Korea, Vietnam and the Indian Ocean have been of conventional pattern and are bound to be so in the foreseeable future.

The top men in the Navy are fully alive to the importance of big ships with endurance, but are diffident about their procurement since (i) big ships are costly; (ii) these takes years to build (iii) are not easy to get due to pulls and counter-pulls at political levels and (iv) it is to be seen which countries are willing to sell ships; on what terms and how far the ships offered would meet the requirements of the Indian Navy. They further rightly maintain that they cannot go in for anything offered at random. They have to make planned purchases, which would fit into their overall plan.

Role of Aircraft-Carriers : According to some, a major role by aircraft-carriers in future is considered highly improbable. It is also maintained that on account of prohibitive cost all countries, except the USA and the USSR have given up the manufacture of aircraft-carriers. But this position by itself in no way either minimises the importance or utility of aircraft-carriers. In general terms, one aircraft-carrier is equated to 2-3 air force ground stations. The carriers have an edge, with the advantage of mobility; change of area of operation at will, and an element of surprise (this is applicable in confrontation with small countries like Pakistan). These, no doubt, are tremendous advantages, but the liability is no less. Loss that can accrue due to damage or destruction of one aircraft-carrier

far outweighs the damage to a ground station, which is bound to be much less and easily repairable. Again this is no sound argument to give up aircraft-carriers.

Vikrant in its present condition (functioning on three boilers) need not be the focal point for discard or conversion. It would rather be presumptuous to think of discarding aircraft-carriers at this stage. In the perceptible concept of war on high seas and land, which is bound to be more of conventional type, aircraft-carriers are bound to play an important role for another 20-30 years. For the Indian Navy, as seen today, they are a "must" in view of the geographical situation of the country, typical commitments and variety of role it can be called upon to play.

The problems confronting the Indian Navy and the likely solutions are :

- (a) *Plan* : Critical examination of the blueprint of 1948 with regard to its applicability now is required. In view of recent developments like USA-China dialogue and the war of 1971, a comprehensive plan for the present and future requirements of 50 years hence should be drawn up.
- (b) *De-commissioning/discarding of old ships* : This is a major problem requiring immediate attention. Most of the ships are past their optimum performance level, but their sheer presence paid dividend in the 1971 War. Discarding of ships is not an easy job, since, first, replacement are difficult to get; secondly strategic reasons warrant retention of a few ships for some time more. Availability of funds is not likely to pose much of a problem, whereas availability of ships will be the stumbling block. Discarding therefore, has to be assiduously planned and phased over a period of time.
- (c) *Maritime Reconnaissance* : This needs a thorough review and re-assessment. Air India International's redundant Superconstallations acquired by the Air Force to replace their defunct Liberators for maritime reconnaissance, has been more or less a makeshift arrangement. The aircraft in use lack the sophisticated equipment required for the purpose. This aspect, therefore, of necessity has to be put on sound footing and dealt on priority basis.

A pertinent issue to be decided upon is—should the Air Force continue to be burdened with this responsibility? Some navies are already doing maritime reconnaissance quite successfully. It is time the Indian Navy also took it over. Naval pilots, by their basic training, are better conversant with the type, class, endurance, role, striking power, speed and other inherent characteristics of naval vessels they are shadowing or looking for. They are quite capable of carrying out both reconnaissance and strike by land or aircraft carrier based aircraft. The switch-over will materially contribute to the Navy's effective control in the area of its operation. Let this be decided, without making it a prestige issue.

- (d) *Are Aircraft-Carriers on their way out and need Vikrant be converted into a Helicopter Carrier Assault Ship ?* As already mentioned, there is no possibility of nuclear warfare for fear of reprisals, and no nation would like to take the onus of starting it. It will, of course, continue to be an effective deterrent. For expected "normal" wars at sea on conventional pattern, aircraft-carriers will continue to play an important role for years yet to come. In view of this and the fact that Vikrant is not fully operational (working on three boilers), its conversion into a helicopter carrier becomes all the more questionable.
- (e) To effectively and adequately meet the new role of the Indian Navy, namely to guard its vast coasts and scattered islands; to come to the rescue of the neighbouring countries and keep an eye on the big power navies at large in the adjacent high seas, big ships with endurance are a "must" and need to be given due priority. For near coastal defence, small "quick hit-and-return" type craft are useful and should be acquired in sufficient numbers. The small vessels as already mentioned, are complementary to big ships and not substitutes. As such, they have their own place in the overall plan. Let not the new-found small vessels be given undue importance. A happy balance of small and big ships needs to be struck.
- (f) The ship building industry in India is very much in its infancy. India does build ships, but as yet not even half the size (in tonnage) of what advanced countries are capable of. This industry is vital

and it has to be broad-based and on a large scale, to meet the ever-increasing requirements of the Indian Navy and the Merchant Navy. Research and development, so essential for the Navy's technical progress, needs to be given due attention and impetus. Indifference in this regard is likely to have a telling effect on the progress of the Navy.

Pakistan, like China, has a slant for under-surface navy (with 15 submarines, inclusive of midgets). The Indian Navy has to take cognisance of this fact and lay the required emphasis on procurement of submarines and missiles. China, contrary to the general belief, is fully alive to the importance of big ships and is trying its best to come up in this respect.

The ever-rising cost of ships is bound to have a direct bearing on the size of surface ships. In other words, cost is of vital importance in restricting their size. The trend, therefore, is, in designing ships of minimum size with capabilities to meet the assigned role. Cost effectiveness has become a dominating factor in any weapon system today and the ships and weapons have to measure up to its stringent standards. The ships of tomorrow, therefore, will have to be the cheapest and most cost-effective for their assigned roles.

SPACE FACTORS—LOCATION, SIZE AND SHAPE—BASIC IMPLICATIONS ON INDIA'S DEFENCE

BM SUBRAMANIAN

THREE fundamental geographical factors about a country must be given careful consideration in any plan for a national defence strategy before its physical, economic and human realities are evaluated to determine its power potential. These are location, size and shape. The national economies of powerful countries clearly reflect the significance of advantageous space factors. Their commanding position in global affairs could be chiefly attributed to their favourable geographical location, size and shape. A nation's opportunities get greatly restricted by negative geographic factors such as isolated location, limited size, unfavourable climate and lack of mineral and power resources. The following survey of India's space factors will provide a basis for understanding certain aspects of the political-geographical picture from a national point of view.

The geographical location of India can be expressed in three ways :—

- (i) In terms of degrees of latitude and longitude—Astronomical Location.
- (ii) In terms of its relation to waterbodies and land masses.
- and (iii) In terms of its position with reference to its immediate neighbours—Vicinal location.

ASTRONOMICAL LOCATION

India lies to the north of the Equator between $8^{\circ}4'18''$ to $37^{\circ}17'53''$ and $68^{\circ}7'33''$ to $97^{\circ}24'47''$ east of the Prime Meridian. The climate of an area is largely determined by its latitudinal location.

Human activities are related to the climate in many ways. Agricultural production and the mode of life of the population are basically controlled by the climate. In India the broad temperature differences are based on the latitude range from south to north and the rainfall is based mainly on the influence of oceans as a source of moisture. Excessive heat

and uncertainties of the monsoon are negative factors from the point of view of human activities. Floods and drought cause regional shortage of food. Inter-State conflicts over the distribution of water and location of dam sites could be attributed to the climatic conditions of India. Natural calamities put great strain on the Government and extra spending for relief operations has become a vital necessity. Food is probably the most important economic element and it has become a powerful political weapon in a country like India where the 'have nots' are a large majority. In this context, there must be a strong national drive towards the goal of self-sufficiency in food production. In spite of the 'green revolution', what we have achieved is not adequate considering the size and population of our country.

Another aspect of the astronomical location of India is the climatic conditions of the various battle areas in which our troops have to fight. Those responsible for strategic planning should give careful consideration to assured supplies of food, clothing, shelter and equipment for troops fighting under any and all climatic conditions. This requires knowledge of the climate and the seasonal weather variations of operational theatres of war, adequate technical know-how in design of material and a huge productive capacity at home.

Countries which are not adjacent to large water bodies are described as Continental and those located in or on oceans are described as Maritime. From this point of view India projects clearly a Continental—Maritime location and the compulsions are to be a land Power as well as a sea Power. The vast continental interior in the north should not be viewed as a land-oriented isolation but in a maritime connected framework of peninsular India. The peninsular seaboard as well as the island groups of the Andamans and the Nicobars, the Laccadives and the Minicoys project clearly the maritime aspect of India's location. The land is sufficiently hospitable both in the continental interior and in the maritime ring. The land frontiers of India are about 15,168 kilometers long and the extensive coastline is about 5689 kilometres in length.

From time immemorial India has shown adequate continental and maritime interests. A maritime outlook was inherent in the early history of peninsular India. The Pallavas were mainly responsible for the colonizing expeditions from India and the Chola Empire spread far beyond the peninsula through the conquest of Ceylon and Southern Burma. Trade with distant countries by sea in those periods was significant.

Intervening seas are usually a handicap to invasion; on the other hand

a long land boundary is often a threat. The south has not been directly affected by the repeated invasions in the continental interior, whereas even during the first 25 years of her independence India was compelled to fight three wars with Pakistan and one with China — essentially in the mountains and plains of the continental interior. But if we analyse our security problems in greater depth, it will be clear that the struggle for dominance of the Indian Ocean by the Great Powers, projects a gradual developing threat for our maritime ring also. The security problems for India arising out of the continental maritime location are vast and varied and this reality must be given foremost priority in any strategic planning.

THE NEIGHBOURS

The vicinal location of India defines its position with respect to the number and kind of neighbours it has. India has a multi-neighbour vicinal location. Our neighbours are China, Pakistan, Nepal, Burma, Bhutan, Bangla Desh, Sikkim (Protectorate), Ceylon and Afghanistan. Afghanistan borders India on the occupied-Kashmir area. Sumatra, in Indonesia, is separated by a sea lane barely 144 kilometres wide from the southern tip of the Andamans and Nicobar Archipelago.

In this context India's immediate concern from the security point of view would be with Pakistan and China. Other peripheral countries have by and large friendly relations with India. The numerous boundary problems interlinked with a multitude of international situations which India faced since independence are essentially due to its complex poor vicinal location. This has deep implications in the formulation of the country's foreign policies. Confrontation by the two hostile neighbours, Pakistan and China, is a geopolitical reality which India has to face and there can be no immediate solution for this. This danger must be contained by effective diplomacy backed by strength. There should be no room for any negligence in defence preparations to sustain and support India's diplomatic efforts. Due to strong political and material support from China and the U.S.A., Pakistan will continue to maintain her hostile posture and will pose a major threat to India's security in various ways in spite of the recent Simla Agreement and India's sustained efforts for a durable peace in the sub-continent. China's present attitude towards India is also not likely to change in the near future. Even if China normalises her relations with India after an ideological truce with the USSR at some stage, the rift between India and Pakistan will continue because of the latter's basic mistrust of India. In the present context of global power politics a geopolitical unity between India and Pakistan is unthinkable. A pre-requisite for such

a unity is economic and military co-operation as well as a common approach to world problems. We cannot expect this to happen since the very basis of Pakistan's foreign policy is to project India as her only enemy. Pakistan is also a member of CENTO. The leaders of India concerned with higher direction on defence matters cannot also afford to ignore the political and material support Pakistan gets particularly from Saudi Arabia, Libya and Iran. The support to Pakistan by the U.S.A. and China is part of their global strategy. These two major Powers are unwilling to accept an independent role for India.

Thus India's poor vicinal location emphasises the vital necessity for her to be a strong military power with a sound economic base backed by a realistic foreign policy.

Some areas of India have vital military or economic advantages and issues involving territorial security are closely linked with the location. The Himalayan mountain chain has ceased to be a natural barrier for India after the Chinese invasion in 1962 and the Chinese occupation of Tibet. This has created a new dimension to our security problem and the entire zone with its various passes has assumed a great strategic importance.

INDIAN OCEAN

India's territory includes a number of islands both in the Bay of Bengal and in the Arabian Sea. As mentioned earlier, in the Bay of Bengal only a stretch of 144 kilometres of water separates the southern tip of Indian island territories from Indonesia. There is no real conflict of interest between Indonesia and India now. The policy of the present Government of Indonesia is adequately friendly towards India, but under the leadership of late Sukarno Indonesia supported Pakistan during the Indo-Pakistan war of 1965 and it was even reported that Indonesian naval units were to give logistic support to the Pakistan Navy. More recently the United States resorted to gunboat diplomacy by sending a Seventh Fleet task force into the Bay of Bengal during the 14-day war with Pakistan in December 1971. In the years to come, India will witness a severe competition among the Great Powers for dominance of the Indian Ocean and deployment of strategic weapon systems wherever they could get a base in this region. In view of this, India has to embark on a massive plan for developing her strategically located island territories. What has been done so far is inadequate considering the magnitude of the problem.

India is the seventh largest and second most populous country in the world. It is one of the 'very large size' political units in the globe covering

an area of 3,267,053 sq. kilometres. It measures about 3,219 kilometres from north to south and about 2,977 kilometres from east to west. Size is a major factor in the evaluation of a political unit and without adequate size no nation can ever aspire to become a significant world power. There is a very close relationship between the size of a country and the relative possibilities for a variety in climate, terrain, soils, vegetation, minerals and other resources. The large size of India offers variety in each to a considerable extent and thereby paving the way for a diversified economy based on agricultural and industrial development. Besides, the very large size of India will always provide distinct military advantages; its production centres can be farther widespread, making it necessary for an attacking power to stretch its supply lines. In the present context of global power politics, India's hopes for building a 'peace zone', particularly in the sub-continent, may not materialise in the foreseeable future and with all the best of moralistic intentions of our policy-makers for a 'durable peace' India may have to use her armed forces again and again in the defence of her territorial integrity and sovereignty.

India has a complex shape projecting, a broader area in the north with its mountain wall and the great plain, a narrow southern peninsula with its coastal plains and the island territories, separated from the main unit. This obviously presents serious problems for the defence of the country and necessitate long transportation lines in all its aspects. The shape of India also enters into the problem of location of its capital, New Delhi, if protection from one of the hostile neighbours—Pakistan—is a leading consideration from the point of view of modern warfare. We cannot also overlook the fact that the factor of vulnerability of any particular area, industrial, urban or critical human areas—within a country has lost much of its importance because air attacks can be made without any regard for distance and the destruction can be carried out at long range. In spite of the irregular shape it is possible to take adequate protective measures for critical core areas, because of India's vast spatial extent.

The space factors of India—location, size and shape—emphasise the urgent need for an adequate defence strength backed by a sound economic base in all its aspects. It must be our primary concern to make ourselves self-sufficient in the field of technological sophistication for defence purposes. Whatever may be the sacrifice the nation has to undergo, our defence strength should in no way be inferior to that of China. India cannot afford to ignore another major aspect of the realities of international politics. In today's world nuclear weapons appear to provide adequate guarantee for the main-

tenance of a country's independence and territorial integrity. Therefore it is time to expand our defence capabilities by reconsidering our attitude towards manufacture of nuclear weapons. It is also essential to introduce compulsory military service for all young men in the age group of 15 to 20. This will also improve the overall discipline in the country which is vital for our national integration. In times of emergency adequate and effective manpower will be readily available for defence requirements.

India has suffered enough by getting out of touch with realities in the modern world of ruthless power politics and we cannot afford to make similar mistakes in matters pertaining to the country's defence.

REFERENCES

1. Elements of Political Geography—Van Valkenburg and Stotz
2. Geography and World Politics—Lucile Carlson
3. Geography and Politics in a Divided World—Saul B Cohen
4. India—A Political Geography—BL Sukhwai
5. Studies in Indian Foreign Policy—Edited by Dr. KP Misra
6. Defence Without Drift—PVR Rao
7. Bangla Desh and India's Security—K Subrahmanyam
8. India : The Search For Power—Maharaj K Chopra
9. Confrontation with Pakistan—Lt Gen BM Kaul.

THE FUTURE INFANTRY RIFLE— A RECOMMENDATION ON ITS CALIBRE

COLONEL AJ BRAGANZA

IN a previous article in this Journal, the future infantry Rifle was discussed. There, it was brought out that the present 7.62 rifle produced by FN Belgium and adopted by most major nations, is too weighty a weapon for the infantry soldier and fires a round that is far too powerful. This puts a handicap on the infantry man in his efficiency, especially at altitudes of about 3650 m (12,000 feet) and above. It was, therefore, deduced that the future infantry rifle would have to be lighter and yet meet the requirement of the users, for which the rifle would have to be designed to weigh less than the present 7.62 mm round. Weight for weight, the infantry soldier would be able to carry more ammunition. The new rifle being lighter could again augment his ammunition carrying capacity. The lighter round and resultant lighter rifle would result in a much less degree of recoil fatigue and more accuracy of fire over long periods of engagement.

Much has been written on the calibre of the rifle, (i.e. the calibre of the bullet) the weight of the bullet, its muzzle velocity and its capacity for incapacitation of the target. Many suggestions of the different rounds which could be adopted also have been put forward. The USA has been reported as having gone firm on the adoption of the M 16, a 5.56 mm rifle which weighs 6.3 lb and fires a 5.56 mm round of bullet weight 55 grains and a muzzle velocity of 985 m/sec (3250 ft/sec¹). It also appears that the USSR, which has been using the 7.62 mm M 43 round since the 1950s (bullet weight 122 grains, muzzle velocity 730 m/sec (2410 ft/sec) is in the process of evaluating a 5.56 mm round for introduction in their army. Fabrique Nationale Belgium, the originator of the 7.62 FAL has also developed a weapon known as CAL (Carbine Automatic Legere) for sale. The last is an automatic weapon with an ingenious burst-fire control. It has an overall weight of 7.3 lb and fires a 5.56 mm bullet of weight 55 grains and muzzle velocity 959 m/sec (3132 ft/sec). Other developments in the 5.56 mm rifle calibre are the AR-18, Stoner 63, Heckler and Koch HK 33, SG 530-1 and the Beretta AR-70 Assault rifle.

1: Recoil energy of this about $\frac{1}{2}$ the recoil energy of the 7.6 mm rifle, far more comfortable to fire and as a result contributes to better accuracy.

It is, therefore, reasonably sound to infer that there is a definite trend in the major armies of the world towards a rifle lighter than the present 7.62 mm SLR and of a calibre around 5 mm.

THE CALIBRE

The aim of this article is to endeavour to determine a suitable calibre for the future infantry rifle to bring down its weight, yet retaining its power for incapacitation at ranges of engagements.

It is proposed to discuss a suitable calibre from the following considerations :—

- (i) effective range required for the infantry;
- (ii) recoil energy;
- (iii) incapacitation of target by low weight and high velocity projectiles;
- (iv) fire power of the Infantry Section ;
- (v) Logistics internationale ;
- (vi) the effect of tracer/incendiary bullets, in short "carrier ammunition" of smaller calibre.

Statistical studies have been carried out after major wars to assess at what ranges most engagements/infantry actions occur. Information obtainable from these sources as well as from Operations Research carried out on data obtained from World War II, the Vietnam War and the Korean War have shown that :—

- (a) About 30 % of all engagements occur within ranges of 100 metres.
- (b) About 75 % of all engagements occur within ranges of 200 metres.
- (c) About 90 % of all engagements occur within ranges of 300 metres.
- (d) About 95 % of all engagements occur within ranges of 400 metres.

These figures indicate that the design of a rifle for the infantry should primarily cater for ranges up to 400 metres only. This finding should be accepted as a basic requirement for a new rifle and it would be more than possible to design a self-loading rifle of a calibre around 5 mm \pm .5 mm and of a weight between 6 to 7 lb which could, with the ammunition designed around the calibre cause incapacitation up to 400 metres. If, however, for any reason the maximum effective range is to be increased beyond the basic 400 metres, the bullet weight from considerations of accuracy and ability to incapacitate would have to be increased, mainly by increase in diameter. In consequence, the total weight of the rifle would go up to about 8 to 9 lb.

which virtually means a return to square one. However, as statistics have proved that 95% of engagements occur within 400 metres, would it be a reasonable or sound proposition to defeat the object of a low-weight category weapon by making it heavier to cater for the remaining 5% of engagements? The answer is obvious—if you want a low-weight category weapon, the maximum effective range it will be used have to be 400 metres.

If the maximum effective range of 400 metres is accepted, a variety of ammunition is readily available for evaluation in order to assist the decision on a suitable calibre. Many sporting types of ammunition in the calibre 5.56 mm are also procurable and deserve to be given a chance of selection. However, there is no reason why independent development of a .5 mm±.5 mm cannot be undertaken, but the research which has already gone into the production of the present types of similar ammunition by advanced countries should suffice as a guide to a sound decision.

RECOIL ENERGY

If one looks into the history of the development of small arms and their ammunition, it will be seen that right from the early periods of the 20th century, the selection of a round for the infantry man was governed by the axiom that the same round should be suitable for the machine gun—both light and medium. Now the machine gun for tactical reasons is required to fire out to ranges of 2000 metres whereas the rifle, as we have seen, is required for engagements up to ranges of 400 metres. The round used in the Light Machine Gun/rifle of most countries todate is the 7.62 mm—one made up of a bullet of about 45 grains with a muzzle velocity of 820 m/sec (2700 ft/sec which results in a recoil energy of such magnitude that for a soldier to fire this round with any degree of comfort, the weight of the rifle has to be about 10 lb so as to absorb at least some of the recoil energy resulting from the bullet weight.

In the 7.62 mm, the acceptable recoil energy that dictated its weight of approximately 10 lb is high enough (about 11 ft lb) to make a soldier flinch at the discharge of each round. This on its own is a prime cause of inaccurate shooting because the natural tendency of the firer is to anticipate recoil and to pull the trigger of the rifle instead of squeeze it with the same pressure each time a round is fired. Heavy recoil results in recoil fatigue and soreness of the shoulder and body and thereby progressively retards the accuracy of the firer. No doubt, this has to a certain extent been mitigated by the fact that the present NATO rifle is self-loading and a good deal of the recoil energy is absorbed by the self-loading action. Nevertheless, this very high-powered round contributes sufficient recoil energy to the shoulder of the firer to render

the action of firing uncomfortable. This is so in single-shot fire and will only result in poor accuracy in engagements which last more than 10 minutes during which time about 300-400 rounds could be expected to have been discharged. It is, therefore, reasonable to suggest that if a much lighter bullet with a suitably high velocity and having a lower recoil energy can do the job as efficiently as before and give the soldier better accuracy for reason of less recoil and discomfort, it should be on the top of our bill.

LIGHT PROJECTILE

The human mechanism is unable to stand up to a projectile capable of delivering a large amount of energy in the shortest possible time. Added to this, if the projectile can deliver all its energy to the target, incapacitation will most definitely result. Based on this proven fact, to cut down on the discomfort arising from recoil of the rifle, it is necessary to use a light projectile with a high velocity rather than a weighty projectile with a lower velocity. To incapacitate a human being at the delivery end, about 58 ft lb of energy is all that is required. This can well be delivered by a light weight bullet of between 70-90 grains at velocities in the vicinity of 880 m/sec (2900 ft/sec) at ranges of 400 metres or by the present 5.56 mm 55 grains bullet with a muzzle velocity of about 985 m/sec (3250 ft/sec). The tendency of this light-weight bullet to tumble on target strike and deliver all its energy to the target is a pointer in its favour when compared with 7.62 mm projectile, which unless it meets up with tough resistance of bone, will pass clean through the target, making incapacitation dubious depending on the point of strike/entry. It is clear, therefore, that for making the new projectile effective, the diameter must be as small as possible and the energy with which it is delivered, as large as possible. This would result in the maximum possible chances of incapacitation. It is, however, obvious that there is a limit to the smallness of the diameter, from considerations of carrying power out to ranges of 400 metres.

The advent of the self-loading rifle replacing the bolt action rifle and the machine carbine have contributed substantially to the increase in fire power of the smallest fighting unit—the Infantry Section of present-day armies. The Light Machine Gun which has been with the Section remained on with it. The 7.62 mm round by virtue of its weight i.e. 5 lb per 100 rounds has been a factor which has prohibited the increase of ammunition per man per weapon. With a lighter round like the 5.56 mm, however, along with a lighter weapon (a possible 6.5 lb of the 5.56 mm against the 10 lb of the 7.62 mm) the enhancement to the fire power of the section would be approximately 100%. For every 100 rounds carried by the infantry soldier

in the 7.62 mm calibre, he would now be able to carry 150 or more rounds. This along with the reduced weight of the rifle would permit the carrying of almost 300 rounds per man within the stipulated weight. Apart from this, with a lighter self-loading rifle, the number of rounds per minute that could be effectively used by the soldier will be greater than with the 7.62 mm. This is because of the more comfortable recoil energy of the lighter rifle.

If the range of 400 metres is acceptable along with the capacity to incapacitate of approximately 58 ft lb force (which is accepted as being adequate to incapacitate) and this permits the use of a round, the recoil energy of which enables the soldier to fire more aimed rounds per minute with far less discomfort than the 7.62 round, it will be patently appreciated that the chance of a strike with the very first round will be far greater than with a 7.62 calibre round. Surely this arrangement should be good enough to assist a decision in favour of a lighter round of smaller calibre.

From the fire power aspect too, the retention of the Light Machine Gun in the infantry section equipped with self-loading rifle, does not seem warranted. Statistical evidence shows that two riflemen each firing aimed single shots at 40 rounds per minute can produce as many hits as the same riflemen manning a Light Machine Gun and firing 120 rounds a minute. This evidently, apart from exploding the myth of the dependence of the Infantry Section on the Light Machine Gun for covering fire, points to the considerable savings in ammunition that will result by doing away with the larger calibre.

LOWER SPECTRUM

Experiments have been carried out on small-calibre projectiles within the diameters .17 to 7 mm. .17 mm as a calibre would have the disadvantage of not being able to incapacitate at distances up to 400 metres and has, therefore, been discarded. Experiments, however, have indicated that the most suitable calibre is between 4.5 mm and 6 mm. One feels that a calibre in the lower spectrum i.e. round about 4.5 mm should be most attractive, but this will pose the problem of the miniaturization of 'carrier' ammunition like tracer, observing and others. This problem with modern engineering techniques at hand, however, should not pose an unsurmountable obstacle. On the other hand, are these types of 'carrier' rounds really necessary? The background of carrier ammunition is to be able to direct automatic fire by the hosepipe method of application. An argument, however, to be considered is whether with semi automatic rifle, it is necessary to provide the infantry men with carrier ammunition? This type of

ammunition could well be left for the Light and Medium Machine Guns, which in the 7.62 calibre have already carrier ammunition at their disposal. It is, therefore, immaterial what calibre between 4.5 m and 6 m we decide on. It is felt that the right thing to go for is the 5.56 mm round as it will be possible to obtain this 'international round' in times of stress, for circumstances do make strange bedfellows.

Countries which technically are very advanced have selected the small-calibre round to base the infantry weapon on for reasons that:

- (i) the effective combat range of the infantry is taken as a maximum of 400 metres.
- (ii) more ammunition, of less weight of ammunition, than previously carried;
- (iii) using the maximum energy to incapacitate along with; and
- (iv) less recoil and carrying fatigue.

This step is a progressive one for the infantry and will render its actions more sustained and effective. Most countries will follow suit and within a couple of decades, we can anticipate most countries adopting the 5.56 mm for the infantry assault role and 7.62 mm for support and in defence alongside the internationally-selected 5.56 mm round for the rifle.

MILITARY MEDICOS ON OTHER LINES

PC ROY CHAUDHURY

SOME of the military doctors in India had devoted themselves to and given of their best, some even their lives, in reconnoitring untapped areas and had left memorable works.

Military doctors were usually entrusted with finding out proper places for sanatoria for the military. This work involved tireless and hazardous tours. Usually the doctors kept excellent notes and there were sources of valuable information. In this way the Shevaroy Hills in the former Madras Presidency were found although it had meant the death of two doctors—Drs. England and MacCosh—of the Madras Military Establishment. They contracting high fever and died in 1824.

A military doctor, Dr. Cornish, was a keen botanist and identified many indigenous trees and plants in the Shevaroy Hills. He noted the excellent possibility of developing coffee plantations there.

While giving a vivid description of the fauna of the hills and of the reptiles, Dr. Cornish did not forget to write about the practice of polygamy there. His account of the Malialis of the Shevaroy Hills is highly interesting.

Dr. W. Griffith of the Madras Establishment has left a number of manuscripts which are kept in the Archives of the Commonwealth Relations Office, London. He appears to have worked in Afghanistan for a few years from 1841. He had also travelled extensively in Assam, Burma and Bhutan. He sent a report on the botanical, agricultural and natural produce of Afghanistan to Lord Auckland and this was forwarded to the Board of Directors in 1841. Dr. Griffith was a geographer as well and his despatches gave elaborate descriptions of minerals, wool, tables of barometrical and thermometrical observations. Portions of Dr. Griffith's journals were published in 1847.

Dr. Gilchrist, a surgeon of the Madras Medical Establishment in 1851 wrote and published a practical memoir on the history and treatment of the diseases of elephants with instructions to preserve the elephant's efficiency as an animal of transport. In the manuscript he gave an account of the indigenous medicines used to cure diseases of the elephant. This manus-

INTERNATIONAL ASPECTS OF OVER-POPULATION

A REVIEW ARTICLE

GROUP CAPTAIN NN DHIR, VSM

IT is strange that countries like ours, where the pressure of population has increased, are less concerned with problems of population explosion than those which might only face this phenomenon in the distant future. The book under review comprises the proceedings of a conference held at Johannesburg under the aegis of the South African Institute of International Affairs. The conference was held in 1970, the centenary of the birth of Jan Christian Smuts, appropriately so since Field Marshal Smuts "gave such deep thought to global problems". This volume reproduces the papers read at the conference with a background paper by Professor B. Cockram, and the opening and closing addresses. A large number of commercial firms assisted the institute in sponsoring the conference. Participants included social scientists from the United States, various European countries, Japan and Israel besides, South African intellectuals. The papers read at the conference make fascinating reading.

DEMOGRAPHIC TRENDS

The very first paper, entitled "Contemporary world demographic trends", brings out the gravity of the population problems facing the world. According to the estimates given, the world population was 300 million at the beginning of the Christian era, 791 million in 1750 A.D., and 978 million in 1800 A.D. A hundred years later, in 1900 A.D., it had increased to 1650 million, and in 1970 A.D., it had spiralled to 3632 million. While the first aggregate of 1000 million was attained around the year 1800, in God knows how many years, the second came in 1930, in only 130 years. The third 1000 million came barely 30 years later in 1960, and the fourth is due to be recorded in 1975, just 15 years after 1960. These are United Nations projections and they reveal that if the conditions of stable fertility and declining mortality characteristic of the recent past

*INTERNATIONAL ASPECTS OF OVER-POPULATION Edited by John Barratt and Michael Low, Macmillan, London, 1972 pp 334, Price \$ 4.50 net.

are maintained, the earth's inhabitants would add up to more than 7500 million persons at the end of the century. Estimates of the population increase in the world may vary, but none of them is, or can be, optimistic.

As regards the rate of growth, the world population will increase by 2.04 per cent between 1970 and 1975, compared with 1.98 per cent recorded for 1965 to 1970. This may seem paradoxical since, at least in the advanced countries, fertility is declining. The growth rate continues to increase because the death rate is dropping faster, both relatively and absolutely, than the birth rate. In India and other developing countries, life expectancy is 52.4 years as against 71.2 for the more developed countries. There is thus further potential for reduction of the death rate and hence for still higher growth rates. The principal cause for the ever soaring growth rate is the phenomenal decline in mortality rates which may be traced to the progress of sanitation and the invention and propagation of life-saving drugs.

World fertility is at present roughly twice the replacement level but even if through some miracle couples all over the world were to reproduce only to the extent necessary to replace themselves, the population would still continue to grow since the present population has a relatively high proportion of persons in reproductive age groups. Thus prospects of a drop in population growth to replacement level are virtually nil.

POPULATION AND POVERTY

Differences in growth rate region-wise are striking. Latin America is the fastest growing region because even though its fertility level is the same as that of other less developed countries, its death rate is appreciably lower. In most of Asia and Africa, death rates are still high; between 15 and 20 per thousand, the lower figure being generally true of Asia. The net growth rate for Latin America has been estimated at 2.9 per cent per annum, for Africa at 2.7 per cent per annum and for Asia at 2.3 per cent per annum.

There are many criteria to indicate relative economic development of nations, all of them singly inadequate. However, per capita income is a useful measure of development since it is highly correlated with demographic, social, technological as well as economic phenomena. In the advanced countries, the per capita income (GNP in US dollars) for 1970 was \$ 3000 and above, while for the developing countries, it was less than \$ 250 per head. India, with Afghanistan, Burma and a few African countries, occupies the lowest rung of the ladder with a GNP of less than \$ 100.

The poor regions of the world have over 70 per cent of the world's population and about 50 per cent of the world's arable land. They are

responsible for about 48 per cent of the world's cereal production. Although almost 80 per cent of the population of these regions is engaged in agriculture, as compared with 5 to 20 percent in the advanced countries, there is a perpetual shortage of food. In spite of elaborate planning over a number of years, agricultural and technological backwardness persists and poverty seems to increase rather than decrease.

POPULATION AND POWER

Is population a source of international power? Obviously, it would be foolish to overlook the important role played by demographic variables in shaping national power, prosperity and prestige. Yet it is difficult to define with any precision the relationship between the two. Crudely speaking, national power is the ability of a nation to influence the behaviour of another nation—enforced, if necessary, by military coercion. In demographic terms, other things being equal, national power depends upon the number of people a nation can tap to make a contribution to national goals. Population size sets crucial limits to a nation's power. Thus General de Gaulle's dream of a grand role for France was a delusion because France was simply too small compared to the two post-war giants, the U.S.A. and the Soviet Union. Yet total population is obviously misleading as an indicator of national power. The effective population of a country is that portion of its population whose activities can be aggregated into national pools to further national goals. This is the effective population. The exact size of this effective population is very difficult to identify. A rough indicator suggested is the number of economically active non-agricultural workers. According to this concept, the United States, China, the Soviet Union, India and Japan, in this order, are the nations largest in effective manpower. They are followed by the United Kingdom, West Germany, France, Italy and Indonesia. If, however, power is calculated by GNP, the ranking is changed radically. The United States is still first, but China yields the second place to the Soviet Union while India drops from the fourth to the tenth place. If we take into consideration the much-publicised fact that about forty per cent of India's population is undernourished and chronically unhealthy, the ranking of our country might come down still further. Thus the very largeness of a country's population may become a source of weakness rather than of strength.

POLITICAL IMPLICATIONS

What are the political implications of the "population explosion"? An important impact of population increase on today's government is the

enormous expansion in the number, variety and complexity of its functions. Apart from the traditional functions of maintaining internal order and ensuring external security, a modern government is expected to take full responsibility for the direction and utilisation of manpower, natural resources and the fast growing technology for the creation of an environment conducive to widespread economic and social well-being of the people. A direct result of population growth is the accelerating rate of urbanisation. In a country like ours, unplanned urbanisation represents a transfer of rural poverty to a mass urban setting and a consequent growth of slums and inter-group conflicts. There could be no better illustration of this than the jhuggi-jhonpuri complexes of Delhi.

Then again, in heterogeneous societies like ours, differential population growth tends to increase political cleavages and tensions. Communal groups are particularly sensitive about threats to their identities and their relative power positions vis-a-vis the majority community. This is one of the main reasons why, in India, family planning programmes are not popular with the minorities.

INTERNATIONAL IMPLICATIONS

In the early days of the European state system, as between the nations of Europe, military power depended a lot on the size of the national population which supplied army recruits and taxes to equip and train them. However, when Europeans encountered peoples of different politico-social structures and less advanced technology, in the new context population was no longer a measure of power. A handful of employees of the East India Company under Robert Clive defeated a far larger Indian force under Siraj-ud-dowlah and ushered in the British Empire in India. Only 400 Spaniards under Cortez conquered several million Mexicans. Just six years ago, a small but well-equipped, dedicated and disciplined Jewish army overran the combined forces of the Arab countries containing more than twenty times the population of Israel. Thus history seems to indicate that demographic strength is a factor of military power only when there is a convergence of the social, economic and financial conditions needed to maintain, equip and command the armies, navies and air forces. However, despite these considerations, other things being at the same level, population is bound to remain an important military asset under specified conditions. As a defensive weapon, a large population, together with a large area, permits defence in depth, makes possible industries capable of producing weapons, assures sufficient personnel for maintenance

services and makes unlikely total annihilation in time of war. It was because of these factors that both Napoleon and Hitler failed in Russia. In Indo-China, General Giap used the manpower of North Vietnam to thwart the sophisticated weaponry of the United States. Also, as an offensive weapon, the size of the population is by no means unimportant. No doubt modern weapons vastly augment the fire power and destructiveness of the individual soldier, but to the extent that they permit any reduction in the number of men needed at the front, they substantially increase those required for service and supply at the base units. Therefore, it is not likely at all that the day of the mass armies has passed, either as a defensive shield or as a psychological weight in aggressive strategies. India's preponderant numbers made a crucial contribution to its success in the Indo-Pakistan War of December 1971 and China's vast military manpower, no less than its possession of nuclear weapons, prompted President Nixon to seek a detente with the Chinese Communist leaders.

ECONOMIC POTENTIAL

The economic potential of a nation allows it to exercise command, influence, control and even coercion in international affairs. A growing population has generally led to an increasing total output but increases in total output are qualified by per capita output. Whether the net effect of population growth on a society's economic potential is positive, neutral or negative, depends on the particular pattern of population increase and on the context within which it occurs. In the Western countries and Japan, increase of population since the Industrial Revolution stimulated economic growth but in Asia and Africa, under totally different conditions, population growth is anything but a stimulant. It has, in the event, proved to be a depressant to economic growth. In this context, the contrast between the highly industrialised and the under-developed countries is the sharpest. The poor, being poor, save little above what they need for subsistence. They are ignorant because they cannot afford schooling. Being ignorant, they cannot learn the skills of more efficient production. Lacking efficient production, they cannot raise their own living standards or contribute to the capital needed for further industrialisation. It is a vicious circle almost impossible to break. Economic aid by more advanced nations has probably aggravated the situation instead of easing it. The under-developed world is everywhere divided by the inconsiderate pursuit of political and strategic interests conducted by the superpowers and their allies. Most of the aid from the rich to the poor nations has gone to build systems of satellite nations in the under-developed world. The poor

have been encouraged to use their resources to buy armaments and have had weapons bestowed on them as military aid. The underdeveloped countries have, in fact, been made pawns in the cold war. Now that the cold war has eased off, there is a dramatic global downward trend in aid from the rich countries to the poor countries.

The external effects of the population explosion have, in the past, comprised migration to less populated areas or expansionist aggression-lebensraum wars. It is difficult to say whether history will repeat itself but sparsely populated areas in South East Asia and Africa would seem to invite expansionism on the part of large and powerful but frustrated neighbours.

CONCLUSIONS

Various conferences held to study the population explosion faced by the world, like the one recorded in this book, have reached tentative conclusions and suggested measures to stem the tide of increase. It is almost universally accepted that the prosperity and power of a country depend on the quality and productivity of its population and not on its mere size. It is the moral responsibility of every nation to achieve an improving balance between its population size, its food production and its ability to finance necessary imports of foodgrains. If there is no progress towards this goal, and the population goes on increasing rapidly, instability and strife are inevitable, firstly because of mass urban in-migration, and secondly, because capital formation to provide extra employment cannot keep pace. The economic costs of high fertility rates and rapid population growth are sufficiently understood by national leaders and makers of public opinion. Even in countries like ours, where official awareness seems to exist, these problems are relegated to the background by momentarily more pressing and important issues. In many cases, lip service leads merely to ineffective implementation of policies and programmes.

The Conference on International Aspects of Over-population brought together distinguished authorities on population questions to consider the vital problem of the rapid population growth in its various dimensions, with special reference to its effect on international relations. The rapporteurs have made an excellent job of their work and what emerges is a book of great topical importance. Consideration of issues at national level is necessarily subservient to their international aspects. One can only hope that books like this would awaken countries like ours to sit up and take notice, not just academically but in concrete measures, on a war footing, as the popular phrase goes, to stave off what looks like certain disaster.

BOOK REVIEWS

THE SEARCH FOR PEACE

by D.W. Bowett

(Published by Routledge, London, 1972) pp. 236 Price £ 2.50

WHEN the United Nations came into existence after the Second World War, much was expected of it towards the achievement of world peace. Twenty-seven years have passed since then but the U.N. has been used as an instrument for political manoeuvring among the super powers, most of the times at the cost of smaller nations. Tensions continue to exist in different parts of the world, especially in Middle East, where the role of the U.N. has been minimal. It's a rather sad tribute to the World Organisation that some of the major settlements like Vietnam, Laos and closer understanding between East and West Germany, have taken place outside the arena of the U.N.

D.W. Bowett of Queen's College has expressed his concern at such developments and suggested some remedies. He strongly feels the need for a clear faith in man's ability to solve the technical problems and in man's intelligence and will to survive, overcoming the dangers of a system with inbuilt potential for mass suicide. (Introduction, p.5) Thus it is not the capacity of man, but the will which matters for him.

In the first part of his treatise, he briefly discusses the circumstances under which sovereign states resort to war. He talks of the principle of "collective security" as inscribed in the covenant of the League of Nations, which could prohibit war and organise the international community to collectively deal with the aggressor. For a clear understanding of why nations take recourse to war, the author has included in this part certain extracts from the League Covenant of 1919, the Kellogg-Briand Pact of 1928, the Nuremberg trial of 1946, the U.N. Charter, Mao's Red Book, the writings of Khrushchev, Che Guevara, Quincy Wright and several others. He emphasizes the Mao dictum "War is the continuation of politics". A very interesting piece is from Quincy Wright which, with a sociological perspective, throws light on the basic causes of war in the atomic age.

In the second part, the author looks at the documents concerning the peaceful settlements of disputes. He analyzes the writings of R.V. Jennings, Walter Goldstein and a report of a Study Group on the Peaceful Settlement of International Disputes, 1966, in the David Davies Memorial Institute. In the third part, he supplements with more documents with emphasis on the peace-keeping role of the United Nations. The extracts in this part focus attention on the role of the military observer groups instituted by the U.N. in several places like the Balkans (1946),

Indonesia (1946), Palestine (1948), Kashmir (1948), Lebanon (1958), Congo (1960) and Cyprus (1964). The author pleads for a more dynamic role for the U.N. peace-keeping forces with active participation of the member states.

The next part of his work deals with the Great Powers' role in international disputes. He talks of the art of "brinkmanship" i.e. the policy of pushing the antagonistic powers (say India and Pakistan) to the brink of war but stopping short of initiating a World War. (p.117). He is also critical of the "Zones of influence". In the documents in this part some light is cast on the respective attitudes of major powers in the Cuban missile crisis of 1962, the invasion of Czechoslovakia in 1968 and the Vietnam crisis. He comes forward with two tentative conclusions. "First, that the conduct of virtually all great powers scarcely allows them to adopt an attitude of moral superiority towards the lesser powers whose belligerent habits are so frequently condemned. The second is that, in the realm of 'primary' peace, the future of the world is by no means guaranteed by the present, highly precarious balance of power". (p.118-9) But he seems to be under the erroneous impression that the two Super Powers had the moral responsibility to safeguard peace; but contrary to his expectations, the emergence of new power centres has contributed to peace through a more or less a stable balance of power.

In Part V the author focuses attention on the role of technology in revolutionizing warfare and pleads for a broader understanding by major powers in giving foreign aid. He also decries the role of politicians as policy makers. The next part on disarmament assesses the comparative achievements and failures, with interesting extracts from the Nuclear Test Ban Treaty of 1963 the Treaty on Non-Proliferation of Nuclear Weapons 1968.

In the last chapter on the future structure of international society, Bowett discusses the pros and cons of the two models given by Clark & Sohn in *World Peace through World Law* (Cambridge, 1962) and Borgese in *Constitution for the World* (Calif. 1965). To him these are only wishful thinking, but can possibly materialise through wider publicity and realization. The overall impression one gets after going through the pages, is that, it is a hasty compilation on a large number of controversial issues facing mankind. Nevertheless one can get deeper insights into the problems by looking through all the references given in the book.

— PKM

A STUDY OF REVOLUTION

by Peter Calvert

(Published by Clarendon Press, Oxford, 1970) pp. 249 Price £ 3.50

REVOLUTION is a phenomenon which has gained much attention in the last few years. A considerable number of books have appeared on the subject. Peter Calvert's work is a contribution to a field

of sociology which needs a greatdeal of improvement to become theoretically sophisticated. He seeks to study it as a political phenomenon and develop a conceptual framework.

The book consists of two parts, the first dealing with an analysis of revolution and the second with revolution in the twentieth century. In the first part, the author has given the characteristics of revolution in terms of process, event, programme and political myth. He has used the comparative method and taken certain variables on the basis of which he studies the phenomenon. He sees revolution as an anomic process which reflects the anti-revolution bias in his work. He has called revolution "the anomic anti-world of politics" (p. 28). Revolution, for him, seems to be a sign of political stagnation.

In the second chapter, the author has developed a model for the study of revolution. He classifies revolution on the basis of the power employed by the revolutionaries to overthrow the government and the power used by the government to counter it. He has used the quantification method. The author talks of initiatives which are the norms of the revolutionary forces, above the norms of society. These initiatives may be external or internal, violent or non-violent. Under "Intrusion and Reaction" he talks of foreign aid either to revolutionaries or to government in order to curb the revolution. He also emphasizes the role of propaganda in changing the degree of internal violence.

In the third chapter, the author applies his model to a case study of the revolution in the Republic of Guatemala, a small country in Latin America in the neighbourhood of a great power, the United States. He arrives at the conclusion that in such cases the revolutionary party of the small nation tends to seek external support from the giant neighbour.

In the second part of the book, the author studies revolution in the twentieth century, through a comparative analysis of sixteen variables in revolutionary patterns. These are periodicity, duration, personnel, direction, level, authority, forces participation, strength, magnitude, weapons, reaction, goals, aid and social initiatives. The author has shown great skill in the selection and treatment of variables and presented the data in the form of tables and graphs which give considerable insight into the process of revolution. He, however, strongly feels that because of the invention of sophisticated weapons and vast development of mass media, revolutions have become shorter in duration and narrower in extent. He suggests that the coups staged by the military elite in various countries are more or less similar because of their common institutional background. The revolutionary movements, in his opinion, may not always result in greater freedom for individuals.

In the last chapter i.e. "Individual and Revolution" the examines different theories of revolution i.e. Marxian theory, Functional theory and Darwinian theory and says that political revolution is not necessarily associated with social change. He stresses the role of individual motivation and pays some attention to the basic animal-instincts of man in the complex situation of society. He characterizes revolution as a phenomenon which appeals to the basic instincts of man,

The book is a significant contribution in the study of revolution. In spite of a slight bias against revolution, it is an indispensable work for researchers. It also provides interesting material to the general reader.

—R

LOW INTENSITY OPERATIONS

by Frank Kitson

(Published by Faber and Faber, London, 1971) pp. 208 Price £ 3.00

AS the title implies, this book deals with the kind of operations that the world has seen in plenty since the close of World War II. Internal defence/domestic security has been a growing problem for the defence services in coping with subversion and or insurgency, the terms commonly used these days to cover a broad spectrum of military operations. The book describes these kinds of limited operations, and the methods necessary in dealing with them.

Subversion has been defined as "All measures short of the use of armed force taken by one section of the people of a country to overthrow those governing the country at the time", while insurgency is defined to cover "the use of armed force by a section of the people against the government of that country". Where subversion merges into insurgency there cannot be clear-cut divisions, and if not dealt with effectively and quickly will end in civil war. Many examples of this type of activity will come to the reader's mind—the Cyprus operations, the insurrection in Algiers, the Mau Mau operations in Kenya, and several others in different parts of the world. Because of the restraints necessary in the use of atomic weapons and the desire to limit military operation to those short of open war, the author contends, and perhaps rightly that subversion and insurgency have taken the place of conventional warfare in most areas of conflict and disturbance in the world since 1945. He does a systematic and scientific analysis of the various forms of subversion and insurgency which have operated in different parts of the globe. He rightly suggests that the role of a country's armed forces should be reorganised for what may, in modern parlance, be called peace-keeping, as well as conventional warfare. The modern tendency, he states, is for countries to organise subversion and insurgency in enemy territory, rather than launch a conventional military attack to impose their will on the enemy. Subversion and insurgency can be successfully combated through closely co-ordinated and integrated activity by both the civil and military leadership, actively guided by the political government.

In this country, we are all familiar with the Nagaland operation, but not much study has been done on the subject. This book gives a graphic description of how much work has been done on this subject in other countries. The author, Brig. Frank Kitson, who has first-hand knowledge of these types of operations in Cyprus, Kenya, etc., is eminently

qualified to write on the subject. He has made it an easily readable book, of as much interest to the civil administrator as the military officer, who would be his adviser, in such operations.

The book is strongly recommended as essential reading for all Defence Service officers and civilian officers who are concerned with the problems of law and order. A must for all good modern libraries.

—KAY

JAMMU AND KASHMIR ARMS ? HISTORY OF J&K RIFLES

By D.K. Palit

(Published by Palit and Dutt, Dehradun, 1972) pp. 305 Price Rs 48.00

IT is indeed heartening that the trend of writing regimental histories is catching on in India. For British military officers, it was a sacred ritual to record all important and noteworthy events in their regiments and also chronicle all developments in organisation and weaponry. What with the desire to celebrate a Regimental Day, or to earn a standard, or to claim a battle honour, the units of the armed forces are finding it indispensable to compile their histories, or to update those that already exist.

"Jammu and Kashmir Arms" is the story of the J&K Rifles, and as claimed by the author, it indeed is "a Regimental History with a difference." It is the good fortune of the unit that it found a writer on the eminence of Major-General D.K. Palit, whose books and articles on military affairs are so highly appreciated.

The author spurned the idea of "assembling the usual stereotyped account limited to regimental activities and subunit trivia (which young officers read only under duress)" and resolved to compile "a history of the military traditions of the Jammu and Kashmir region so that the story of the J&K Rifles would be presented against a backdrop of the regional tradition of arms....." The conception is laudable, but there is perhaps more to it than meets the eye here. For, it is a well known fact that Indians as a nation are not yet fully history-minded. There is consequent lack of proper machinery for recording events and developments. This was no less the case with the J&K Rifles. The paucity of material would inevitably impel one to broadbase the history in the manner adopted by General Palit.

Even so, the outcome is satisfying. The author traces the history of Kashmir from early historical times with a wide sweep, and then goes on to describe the history and culture of the Dogras. His facile pen then traces in two separate chapters the career and achievements of

Maharaja Gulab Singh—credited with the founding of the J&K State—and his expeditions in Gilgit and Chilas. These chapters also describe vividly the conquests of the famous General Zorawar Singh.

Maharaja Gulab Singh was succeeded by Maharaja Ranbir Singh. The rule of the former was distinguished by his army's extraordinary expeditions beyond the State borders, which brought pride and prosperity to Kashmir. The latter brought about great improvements in educational and medical facilities and extended full religious freedom to his British subjects. His son, Maharaja Pratap Singh, was confronted with difficulties his relations with the British. These were ultimately smoothed over and the Imperial Service Troops of Jammu and Kashmir played an effective role during the First World War. The subsequent eight chapters may perhaps be called the proper regimental history. For these chapters describe the part played by the J&K Rifles severally in the First and the Second World Wars, in the border raids of 1946-47, in hostilities on the Jhelum front, in the invasion of the Valley and the defence of Poonch, etc. The lean and dry bones of facts have been invested with robust flesh of interesting narration.

An interesting book on the military career of Jammu and Kashmir, well written and well brought out. It should commend itself to all military libraries.

KMLS

PANZER LEADER

By Heinz Guderian

(Published by Palit and Dutt, Dehradun, 1970) pp. 528 Price Rs 49.75

THIS book brings out in brilliant detail the reason why General Heinz Guderian has earned for himself one of the foremost places as a commander of armour, and the author of some of the daring innovations in its employment and tactics.

It was with the help of the Panzer forces that Guderian so brilliantly created and trained that the German war machine inflicted the first crushing defeat on the Allies in the early stages of the Second World War.

With a profusion of detailed maps the 1940 Campaign with the attacks on the Meus near Sedan and the follow-up to the coast comes into clear perspective, especially since armour was used on such a massive scale.

It was only the brilliant conceptual vision of a Guderian that could have stood up to Hitler's determined views. His honesty of purpose dared him to oppose the Fuehrer when he felt he was wrong.

He discusses the Polish campaign with a clarity of detail that outmatches military accounts in most histories of the war. The action of the Panzers right up to the capture of the Channel ports and Hitler's fatal decision to stop has been recounted with frank detail.

Perhaps the greatest contribution to military history of the European Campaign has been made by Guderian's analysis of the Campaign in Russia in 1941, including the detailed preparations, the crossing of the Dnieper, and the decision whether to strike for Moscow or Kiev.

With his first dismissal and being kept on the inactive list he showed his mettle as a man and a dedicated soldier by not letting things slide.

Finally as a Chief of the General Staff his account of the Panzer actions on the Eastern front, the reverses suffered and the final bold stroke of the Ardennes offensive is perhaps one of the most forthright accounts of a General under great pressure, who does not try to cover up for the inadequacies of the higher direction of war, or for their tactical failures.

A notable part of the book is the profusion of maps that make the details of the massive use of armies on both sides easy to comprehend.

—KG

THE RAJAH FROM TIPPERARY

by Maurice Hennessy

(Published by Sidgwick & Jackson, London, 1971) pp, 183 Price £ 2-50

THIS book would form a valuable addition to the collection of military memoirs of Eighteenth Century European adventures in India.

The author has been in colonial African service and has written on Africa. Being Irish by birth, he found the life of George Thomas, an Irish peasant, worth writing about. Relevant historical material from more than 25 books, memoirs, etc., have been consulted to bring out the story of a man from Tipperary who won and carved for himself a state and called it Hariana.

As history novelised it is a fascinating account. Eighteenth century India had much to offer an adventurous freebooter like George Thomas who displayed daring qualities in military adventure and romance.

Thomas' earlier years were spent in poverty. To escape penury, he enrolled aboard a British man-of-war proceeding to India. On reaching Madras he deserted the ship and joined the brigands, which earned him the title of "Irish Pindari". He took to serving Begum Sumri of Sardhana. He led her troops with success crowned with a torrid love affair with the Begum.

This unique lady is still remembered by the Basilica of St. Mary she built in 1829 at Sardhana (a place close to Meerut). This is a famous Catholic pilgrimage centre now. The events leading to it form an interesting saga.

An intrepid campaigner, George Thomas fought many a skirmish. Allied with the marauding marathas, he was a terror to the Sikhs too. His founding of his own green fields in nostalgic memory of the fields left overseas should be of interest. Haryana is a reality now.

Thomas' later years, however, were full of trouble and strife and he was forced to seek the protection of the British flag. He was only 40 when he died in 1802. He was buried in a British cemetery at Bahrampur.

The author has resurrected a comparatively unknown figure from the historical complexities of Eighteenth Century India.

— MR

THE LEGACY OF CHINA

ed. by Raymond Dawson

(Published by Oxford University Press, London, 1964) pp.392 Price Rs 17.50

THERE has been, for long, a need for a single volume which will give the curious reader a clear, concise and authoritative account of all aspects of Chinese history and achievement. This book, in the "Legacy" series, edited by Raymond Dawson, himself an eminent Sinologist, seems to fulfil the need admirably.

In his introductory chapter on the Western conceptions of Chinese civilization, the editor has had one main objective: to warn readers against accepting traditional, as also contemporary, misconceptions of China. Take, for example, Marco Polo's description of the fabulous wealth at the court of the Great Khan. More accurate historical sources reveal that the Venetian traveller's accounts were exaggerated to a fair degree. This is not to say that these accounts are of no historical value; only that they ought to be considered with caution.

Similarly, the editor talks of yet another popular Western myth, that of China being a changeless land. Fortunately these misconceptions are gradually being cleared away by the promotion of sincere interest in, and curiosity of, Chinese history by Western historians.

Of the remaining chapters, some make heavy reading for the layman but are of sufficient academic interest to the serious scholar. Particularly stimulating is the section on philosophy and religious thought where one finds the themes on Confucianism and Taoism well developed.

To the connoisseur of Chinese art, a longish article by Michael Sullivan should be of interest. There is, also, a very illuminating essay on science and China's influence on the world where Joseph Needham elaborates on the notion that although the Chinese made a sufficiently large number of scientific discoveries, these were utilized only in conformity with the contemporary Chinese social environment. This is important. For, whereas the European nations utilized science to their advantage in the international sphere, the Chinese utilized it within the confines of their country. Which is perhaps the one reason why the West considered China a changeless country.

The volume is well illustrated both by plates and text figures. Some of the plates depict collectors' items. A few of these, such as the Kuan ware vase, Southern Sung, are visual delights.

— AT

THE BRAHMANICAL CULTURE AND MODERNITY

by A.D. Moddie

(Published by Asia Publishing House, Bombay, 1968) pp.143 Price Rs 16.00

THE expression "brahmanical" has been infused into the English language to describe an attitude to life. Basically, it means to belong to a high class, not necessarily a caste distinction. Moreover it particularly describes the attitude taken by the type of "brahmin" who is prepared to sit in his ivory tower complacently aware of his level above the others and surround himself with the traditions that go along with his position.

India today is a conflict of tradition and modernity. The brahmin civil servant who religiously observes 3,000-year old practices by performing his morning prayer and being strictly vegetarian, sits in his 'koi-hai' club in the evening sipping scotch. His children are educated in westernised public schools, but the father would not dream of ever allowing his daughter to marry a boy outside her own sub-caste. It is thus an approach to life that has an obvious last-minute brushing up of modernity to cover up the diehard traditionalism.

Perhaps where this attitude of the upper class Indian is reflected is in the working of the Government of India. In a world which is everyday paying more and more for time, the administration of this country is tending to become lethargic and inefficient.

Why is this? Boggled down by years of tradition, we are loath to modernise more than superficially. The new "brahmin" cannot leave behind the ideas that were drilled into him before his rise in class. While dealing with an industrialist, the officer in the administration cannot but look on his visitor as a glorified version of the greedy penny-store owner

across the street. The private entrepreneur still considers the word 'profit' as undignified and only in the money-lender vocabulary.

Mr. Moddie discusses the reasons for the way the top administrative people in both the Government and the private sector, the "brahminical culture", act and think. He finds the links between the general inefficiency and the old-age traditions which are partly responsible for it. He urges the quick abolition of these traditional spokes and the need to train the "brahmin class of modern India" to think and act in modern ways. The author discusses this problem from the sociological and physiological angles. Some of the remedies he has suggested are dynamic and interesting. The book is a bold piece of loud thinking by a man who has understood his countrymen well.

— MR

IDEOLOGY AND ORGANISATION IN COMMUNIST CHINA

by Franz Schurmann

(Published by University of California Press, Berkeley, 1968) pp. 642 Price \$ 4.95

THIS book was originally published in 1966, covering the period 1950-61. The new edition has been enlarged primarily by the addition of a supplement which covers the period 1961-67. As the title indicates, the book is also divided into chapters dealing with ideology, party, army and government organization, and urban and rural society. Dr. Schurmann is quite modest in admitting at the very beginning that "It is an immense task to study a structure of ideology and organization.... The only approach I could see was to identify certain central areas of concern, and begin the study" (p. 8).

To begin with, the author raises a general question about the structure of the social system of China. He asks what are the *ethos*, *status groups* and *modal personality* in China. In answer, he suggests that in China, ethos has been shaped by political ideology (Marxism-Leninism in the 1950s, and Chairman Mao's Thoughts in the 1960s). Ethos in China, the author states, is not based on human values, but on socio-political goals. The body of leaders within the organization of the party, army and the government, according to Dr. Schurmann, constitutes the status group. As yet, he states, the class of professional intellectuals has not risen in China, and until then, the emergence of the "new class", *a la* Djilas, in China will be delayed. As for the modal personality, the author points out, it is the cadre of the Communist Party. The cadre is locally influential and emulation worthy, and is supposed to be both "red and expert".

The author then describes in detail, and follows up with a penetrating analysis, the ideology of China, the organization and its leadership structure, and the society in which the cadre functions. The book is too voluminous

to be described in brief in this review, but it needs to be stated that Dr. Schurmann has produced an excellent piece of scholarship that this reviewer recommends to all serious students of China. If at all there is a complaint against this book, it is that the supplement is not integrated into the main body of the book.

—SS

A SHORT HISTORY OF CHINESE COMMUNISM

by Franklin W. Houn

(Published by Englewood Cliffs, New Jersey, 1967) pp. 245 Price \$ 2.45

THE author hopes to serve with this book those who are seeking an introduction to the Chinese Communist Movement. It is a book that is frankly sympathetic to China, to an extent that its objectivity may be questioned. He emphatically denies that China has aggressive designs anywhere. As for the Sino-Indian conflict of 1962, the author implies that India was entirely at fault, and that China merely wanted to "teach India a decisive lesson".

In the author's view, the Chinese revolution has achieved the following : Domestically, it has re-united China as never before, and has put the nation on the path of industrialization. Externally, the Communist Party of China must be credited with having made China "stand up" after a century of humiliation. This, Mr. Houn concludes, will inspire all the underdeveloped nations of the world.

The book has many merits, not the least of which is that it is written in an engaging style. But unless the reader is pre-persuaded to the author's assumptions, reading the book will leave one's knowledge somewhat one-sided.

—SS

DIFFERENT KIND OF WAR

by Milton E. Miles

(Published by Doubleday and Company, New York, 1967) pp. 629 Price \$ 7.95

THIS book is bound to be controversial. It describes the organization and maintenance of an American force under a naval officer in China during World War II. The group started activity in China under personal, oral and secret orders from the Chief of Naval Operations, U.S. Navy. It started ostensibly as an organisation to establish weather stations and organise a group of coast watchers to support the activities of the American Pacific Fleet. The leader of this group was a remarkable

person, to say the least, and the goodwill he was able to evoke from the Government of Chiang Kai Shek says volumes for this officer's talent, capacity and activity.

Starting with barely a nucleus of a dozen of people, towards the end of World War II, he was operating a force of about 2,500 Americans and between 50,000 and 100,000 Chinese. A most creditable effort whichever way one looks at the problem. This organisation not only did its official work of weather forecast but also operated subversely against the Japanese and was responsible for killing about 71,000 of the enemy, which included both Japanese and the expanding Communist forces. Towards the end of the war as American policy towards Chiang Kai-shek vis-a-vis the Communists was changing and the increasing interference by the Office of Strategic Services and the Director of Military Intelligence, as well as the senior American Field Commanders in the area, gave rise to much friction before Commander Miles was withdrawn from the area.

The fact that this officer was subsequently promoted to Vice Admiral, speaks volumes for itself, and the fact that Admiral Arleigh Burke has written a foreword to the book gives enough indication of the importance of the work of this task force during World War II. It is a mine of information about operating a guerilla force in a friendly country which is beset simultaneously by external enemies and internal political dissensions. The author, who is also the hero of the book, is to be complimented for an operation of a highly dedicated nature at grave personal risk and cost. A story of high adventure recommended for service libraries.

—KAY

THE SIEGE

By Russell Braddon

(Published by Jonathan Cape, London, 1969) pp. 352 Price 38 S.

THIS ignominious siege of Kut-el-Amara was perhaps the worst disaster that befell the British in their campaign in Mesopotamia. This is the most obvious conclusion that can possibly be inferred from reading Russell Braddon's vivid account. The ignominy and the disaster are both exceptionally well described, though not without some serious reservations.

All historians have the advantage of hindsight when passing judgement on historical events and this ought to be used with temperance and moderation. Quite obviously, Mr. Braddon thinks otherwise. The reader is apt to get the impression that the blame for the disaster at Kut must fall directly on the garrison commander, Major-General Charles Townshend. One can almost hear the author say "Kut happened because of Townshend." Nothing has ever happened because of any one man. All events in history are inter-related. The author's disregard of this truth mars an otherwise highly readable book.

The book is well documented by both official and personal records. Quotes from personal reminiscences of survivors of the campaign add colour and help make the book more than just military history.

Interestingly enough, the author's sources throw considerable light on the role of Indian troops who formed the bulk of the British force at Kut-el-Amara. The Indian soldier is shown to be possessed of qualities which are only moderately martial. Besides, he is said to have been highly susceptible to influences of religion and social taboos. Much of this is difficult to accept if we are to believe various histories of the Indian Army.

Its shortcomings notwithstanding, the book stands out as a result of hard work and plenty of research. In fact, the author himself walked from Baghdad to Basra via Kut. Which is claim enough that where military events are concerned, he has been able to comprehend them and put them across to the reader in a clear and logical manner.

"The Siege" should be read by all keen students of military history, if not all those seriously interested in the military profession. Though systems of warfare have changed beyond recognition since Kut was a tragedy, there are lessons of considerable importance to be learnt from the analysis of a campaign which was ill-conceived and doomed to disaster even before the first shot rang out.

— AT

BADGES AND EMBLEMS OF THE BRITISH FORCES

(Published by Arms and Armour Press, London, 1968) pp. 64

THIS small book of 64 pages contains nearly 350 illustrations of the badges and emblems worn at the outbreak of the Second World War by the British armed forces. About 130 of these carry brief historical sketches consisting of a few sentences each.

The original publication dates back to 1940. As it has long been unobtainable, the present reproduction was brought out in 1968.

During the British rule, many of the regiments which used these badges and emblems came out to India or fought in different theatres during the Second World War side by side with the Indian forces. This historical association is bound to induce all military establishments in India to give the book a place in their libraries.

This book prompts some comments on the state of heraldic research in India. One can find a number of books—periodically updated—on heraldic aspects of the British armed forces, like their flags, standards, colours and guidons; on crests, on formation signs, on awards and decorations; and on their badges and emblems. There is hardly any corresponding work done in India in regard to the Indian armed forces.

It is a matter of regret that even after a generation of independence, and in spite of major military operations that have punctuated this period, there is hardly any consciousness among scholars of the value of different branches of military history. There is much valuable historical material lying scattered which goes abegging, and will before long be lost to posterity.

— KMLS

BATTLE HONOURS OF THE BRITISH ARMY

by C.B. Norman

(Published by David and Charles, Newton Abbot, 1971) pp. 500 Price £ 4.20

A battle honour commemorates a battle, action or an engagement in which a unit takes a creditable part. It is a highly prized acquisition for a unit. It enshrines the memory of distinguished operations. The heritage of supreme sacrifice, and defiance of death, and gallantry of a distinctive character becomes a source of inspiration to the future generations. For these reasons, a battle honour is conducive to esprit de corps and efficiency. For, the traditions thus established continue to challenge and inspire the succeeding generations of soldiers. No wonder, therefore, the regimental colours on which battle honours are emblazoned constitute the rallying point in battle, and sustain morale and infuse unbounded powers of endurance in the face of the greatest peril.

A "Battle Honour" is awarded to the executive arms—the Armoured Corps, the Corps of Engineers and the Infantry. It is awarded in recognition of the fact that a unit fought with distinction against the enemy and did not just content itself with the mere performance of its allotted task. The battle honours so conferred on a unit are emblazoned on its colours, standards or guidons. A unit can also use them in its official crest badge and on the drums. They are also mentioned in the Army List against the regimental title of a unit. A "Theatre Honour", on the other hand, is awarded to a unit located in a particular theatre during the chronological limits of a particular operation, provided it performed its allotted task. This honour can be used in the official crest of the unit and be mentioned in the Army List. It is, however, not emblazoned on the unit's colours, etc. It is also awardable to the executive arms alone. The "Honour Title" is restricted to units of the regiment of artillery.

This book, first published in 1911, has been re-printed and published in 1971—a fact which amply testifies to the continuing value of the work. The blurb rightly claims it to be a classic reference book, containing details of army battle honours from Tangiers, 1662, to the years of the Boer War. In its 27 chapters, it encompasses all the battle honours won by the British and the Indian units during the specified period.

The book can be unreservedly recommended to all military libraries as a work of perennial value. Each chapter is earmarked for a separate

theatre, such as the Mediterranean, Northern Europe, Americas, India, Flanders, West Indies, Egypt, Soudan, the Peninsular War, the Crimean War, etc., in different periods of history. Chapter 13, for example, is entitled "Battle Honours for Services in India, 1818-1826". During this period, many an important battle took place at Kirkee, Nagpur, Bhurtpore, etc. Each of these battle honours forms a separate section on the Chapter. To provide an idea of the system followed in the book, the "Bhurtpore 1826" section starts off with a list of the British and Indian units that distinguished themselves in that battle. The narrative starts with a backdrop of the earlier infructuous efforts of the British Government in India to capture the fort of Bhurtpore. An account of the successive failures of Lord Lake in 1803 and 1804 is followed by a description of the fighting in 1826 when, after all, the British were able to reduce the formidable fort. These accounts are very interesting in themselves and also provide authentic historical information. Almost each section contains a list of the casualties suffered by the different units which participated in the campaign. This serves to give an idea of the seriousness of the fighting, and to vindicate the claim of the unit to the award.

The author has very rightly remarked in the Introduction that "The whole question of the award of battle honours abounds in anomalies. Paltry skirmishes have been immortalized, and many gallant fights have been left unrecorded." This, however, is hopefully a thing of the past and lessons have been learnt on how to obviate the earlier lapses in judging the claims for honours. One, however, wonders when free India would take up work of a parallel nature vis-a-vis the First and the Second World Wars and the Kashmir operations of 1947-48, not to speak of the recent wars of 1962, 1965 and 1971. One very much longs after seeing this book that some Indian author and some Indian publisher would set himself to this labour of love.

— KMLS

SECRETARY'S NOTES

ANNUAL SUBSCRIPTION

I would like to thank all those members who paid their subscription so promptly at the beginning of the year. To those of you who have not yet paid, may I remind you that your subscription was due on the First January. Would you please, therefore, put a cheque in the post to me TODAY? There are some members who have also to pay their subscription for 1972. They are requested to make the payment for both the years to avoid unnecessary reminders.

SUGGESTIONS FOR THE JOURNAL

The U S I Journal is in its hundred-and-three years of publication. As you will no doubt appreciate, the Institution spends a great deal of its funds on producing this publication, we would like to have your comments, criticism and suggestions so that we may improve the publication to meet your requirement.

CHANGE OF ADDRESS

Several cases of non-receipt of Journal have been reported due to members not informing the Secretary of their change of address. Members are requested to inform this office promptly whenever there is a change of address.

NEW MEMBERS

From 1st April 1973 to 30th June 1973, the following new members joined the Institution.

ACHARYA, Sqn Ldr A.A.
ADLAKHER, Captain A.K.
AHMED, Sqn Ldr S.
AHUJA, Major S.K.
ALI, Flt Lieut S.I., Vr. C
AMAL KUMAR, Sqn Ldr
ANEET SINGH SAHOTA, Major
ANEJ RAJAN, Major
ANIL SAWHNY, Major

ANUP KUMAR, Major
ARJUN BANNERJEE, Captain
ARUN KUMAR DAR, Sqn Ldr
ARUN VERMA, Major
BABBAR, Mjaor V.P.
BADRAIN, Major R.S.
BAGCHI, Flt Lieut K.B.
BAINS, Major N.J.S.
BAJWA, Major D.S.

BAJWA, Major D.S.
BAJPAI, Flt Lieut S.P.
BAL, Major A.S.
BALAKRISHNAN, Captain
BALBIR BEDI, Major
BALBIR SINGH, Captain
BALI, Sqn Ldr K.P.S.
BALLI, Major J.S., S.M.
BANNERJEE, Major A.K.
BATH, Major G.S.
BATPUTE, Major SATISH
BAWA, Major J.S.
BAYEE, Major S.S.
BEDI, Major D.S.
BHALLA, Flt Lieut G.S.
BHARDWAJ, Captain R.M.
BHANDARY, Major M.S.
BHATT, Flt Lieut N.K.
BHAVNANI, Flt Lieut A.
BHAWANJIT SINGH, Major T.B.I.
BINDRA, Major J.S.
BINDRA, Sqn Ldr K.S.
BRAHM PRAKASH, Captain
BUDHIRAJA, Captain ANIL SARUP
BUTI, Flt Lieut S.K.
CHABBA, Major J.S.
CHAHAL, Flt Lieut N.S.
CHAHAL, Captain S.S.
CHAND, Major S.P.
CHANDA, Captain B.
CHANDRASEKHAR, Flt Lieut K.
CHANDEL, Captain B.S.
CHANDYOKE, Major JAGJIT SINGH
CHATTERJI, Major J.L.
CHATTERJEE, Flt Lieut S.K.
CHAUDHRY, Major K.P. (Life)
CHAUDHRY, Major Z.S.
CHAUDRY, Major B.R.
CHAUHAN, Major D.
CHAUHAN, Major K.S.
CHAUHAN, Cdr N.K.S., IN
CHAWLA, Major P.R.
CHERY, Captain V.R.K.
CHITRE, Flt Lieut A.G.,
CHOPRA, Sqn Ldr S.S.
CHOPRA, Flt Lieut T.P.
CHOWDHURY, Major S.K.
CORNELIUS, Major B.
DABIN, Flt Lieut V.R.
DAHYYA, Capatin D.S.
DALIP KUMAR PATEL, Sqn Ldr
DALIP SINGH GHAI, Major
DANDONA, Major H.M.S.
DASS, Captain S.K.
DATTA, Major J.K.
DAVRAY, Sqn Ldr V.P.
DELTON, Sqn Ldr K.R.
DESA SINGH, Major
DHADLI, Sqn Ldr A.S.
DHANOYA, Major T.P.S.
DHILLON, Sqn Ldr K.S.
DINA, Major B.K.S.
DOGRA, Captain H.C.
EAPEN, Major PLANELAL GEORGE
FREDRICK, Captain D.S.A.
GADKARI, Flt Lieut D.P.
GAMPULE, Sqn Ldr S.D.
GHANEKAR, Major S.G.
GHARJAKHIA, Capt G.S.
GHOGALE, Major J.P.
GILL, Captain T.S.
GILL, Sqn Ldr V.P.S.
GIRDHAR, Major P.S.
GOEL, Sqn Ldr A.C.
GOGLANI, Flt Lieut A.S.
GOKHALE, Sqn Ldr M.S.
GOPAL, Brig H.R.
GOSAL, Flt Lieut M.L.
GOYAL, Major Y.P.
GUJRAL, Major G.N.
GUJRAL, Major S.C.
GULATI, Captain V.
GUPTA, Captain A.M.
GUPTA, Major N.K.
GUPTA, Major S.P.
GUPTA, Sqn Ldr V.K.

GURDIP SINGH, Major
GURIOBAL SINGH, Major
HAMMIR SINGH, Major
HANNURKAR, Flt Lieut P.L.
HARBHAJAN SINGH, Major
HARDEV SINGH, 2/Lieut
HARISH CHANDRA, Brig
HARITYA, Major R.
HARWANT SINGH, Major
HEER, Flt Lieut S.S.
HEMINDER SINGH, Major
JACOB, Captain JAGAN
JACOB, Captain J.S.S.
JAGJEET SINGH, A/Major (Life)
JAMWAL, Captain B.S.
JASPAL SINGH, Captain
JASWANT SINGH SETHI, Major
JAYA RAO, Flt Lieut P.N.S.
JHARYI, Major R.C.
JITANDAR KUMAR, Major
JELLY, Major G.S.
JOSEPH, Major M.J.
JOSEPH, Brig T.C.
JOSHI, Captain P.D.
KADKOL, Major V.A.
KAHLON, Major R.S.
KALIA, Captain S.S.
KAMYAL, Captain, M.S.
KANWAL, Sqn Ldr K.D.S.
KAPIL, Sqn Ldr KAK
KAPILA, Major AVINASH
KAPOOR, Major MAN MOHAN
KAPOOR, Major T.
KARKARE, Major H.G.
KARKE, Major M.S.
KARKI, Major R.S.
KARTAR SINGH, Major
KATAL, MAJOR T.S.
KATARI, Flt Lieut G.K.
KATARIA, Captain S.S.
KATHURIA, Major A.K.
KATUCH, Major S.C.
KAUSHDIL, Major V.P.

KAUSHAL, Sqn Ldr B.B.
KAUSHIL, Sqn Ldr S.S.
KHER, Flg Offr P.C.
KHANKA, Major S.S.
KHANNA, Major SURESH BABA
KHANNA, Captain S.K.
KHANNA, Captain V.K.
KHANNA, Captain V.K.
KHANNA, Major R.B.
KHOSLAY, Major M.P.
KOHLI, Major H.S.
KOSHA, Sqn Ldr V.K.
KRISHAN CHAND, Captain
KRISHAN CHAND, Major
KRISHNA PRASAD, Major
KULDIP ZUTSHI, Major K.
KULWANT SINGH, Captain
KUMAR, Captain Y.
KUMAR, Squ Ldr V.G.
KUTTY, Major K. NARAYAN
LAHIRI, Sqn Ldr S.K.
LAMBA, Major H.S.
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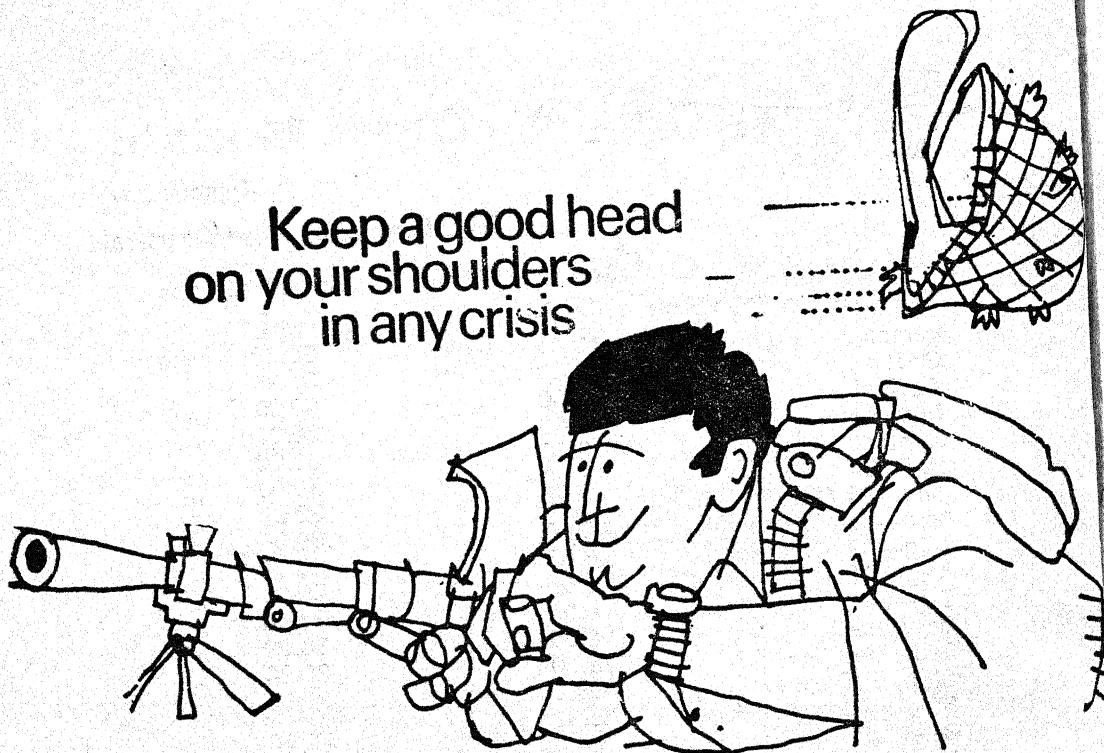
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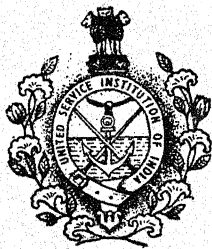
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